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See pages 19, 20, 22, 24, 111, 113, 115 for catalogs and publications on municipal and civic subjects

For Index to Advertisements see page 132

Again PITTSBURGH METERS *are chosen!*

Some 5,000 persons will occupy the 1,622 apartments in the new PWA Housing Project in Williamsburg, Brooklyn, New York. The Williamsburg Houses cover twenty-four acres or twelve city blocks. It is the country's largest low-rent and slum-clearance project.

The water supply for this good-sized "town within a city", like that of thousands of other towns and cities both large and small, is measured by Pittsburgh Water Meters. They can be relied upon to give accurate measurement and long service.

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The Cities' Role in Pump Priming

To Stimulate Employment and Adequate Relief

THE pump of prosperity needs priming again. A major cause therefor is visualized on the front cover of this issue. When the biggest producer of revenue for any enterprise withdraws much of his support, others must come to the rescue if widespread hardship is to be averted. Notwithstanding the fact that the battle against unemployment has by no means been fully won, public pressure for a balanced budget and against further increase in Federal taxes seems likely to force further retreat by Uncle Sam from the pump-priming function which he performed from 1933 through 1936. Hence the need for prompt municipal action to the limit of local ability.

It is to be hoped that the present efforts of the Federal Administration to stimulate private activity in home-building and public utility and other fields will meet with nation-wide success on a large scale. Otherwise the need for new PWA or WPA funds, as foreseen in the resolution of the United States Conference of Mayors quoted below, will become a reality. But for local governments throughout the land to sit back and "let Uncle Sam do it" would be a tragic disservice. If municipal pump-priming activities for 1933-1936 were to be graphically shown, the size of the pumps in those years would fluctuate almost in reverse ratio to the ones functioning with Federal funds. But in 1937, with the Federal pump seriously shrunk in effective capacity, local pumps have as yet grown little if at all.

Recent improvement in local tax collections—toward which Federal spending has made substantial contributions—have put municipal finances on a much sounder foundation than during the previous several years. Bonds can be floated at interest rates which are most advantageous to municipalities with sound credit. The time has come, therefore, for cities, towns and villages throughout the United States to restore essential services which were curtailed during the depression years, and to make appropriations or vote bonds as rapidly as possible for needed and well-planned public improvements.

Action of Mayors' Conference on Relief Problems

THE urgent need for united action by governmental agencies and private industry in solving the unemployment problems constantly resulting from technological advance was stressed at the annual meeting of the United States Conference of Mayors in Washington last month. The probable need for a substantial increase in WPA appropriations by the next session of Congress was also stressed:

"*Whereas*, judging from the estimates filed with the United States Conference of Mayors by the major cities of the nation, present relief rolls during the past few weeks have been increasing and the trend is upward, and

"*Whereas*, in the event the relief load continues to increase during the next few months, it is apparent that the WPA must increase its employment quota in the affected areas, in order to meet these needs, and

"*Whereas*, to do this it would be necessary to request a deficiency appropriation, and

"*Whereas*, the formula of dividing the fund appropriated for the present fiscal year into twelve monthly allotments is unscientific, and

"*Whereas*, if we are to continue the present American program of providing work for those who are able to work, it is necessary to make these recommendations,

"*Therefore be it resolved*, that this Annual Conference of the United States Conference of Mayors indicate the above facts at this time and direct the Executive Committee to conduct a survey of conditions in December and report the findings of such survey, together with specific recommendations, to the Congress when it convenes in January, 1938."

The threatened closing down of the Public Works Administration and the curtailment of Works Progress Administration expenditures would not only mean added burdens for local relief, but a serious curtailment of orders by which private industry has been profiting. Although WPA was set up primarily as a work relief agency which was to make wages rather than purchases its main objective, it is significant that more than a half-billion dollars of WPA funds have already been spent for materials, supplies and equipment. The official figures show that these purchases up to September 30, 1937, aggregated $503,681,761, and that among the major items were cement, lumber, paving materials and mixtures, pipe and fittings, building materials, structural and reinforcing steel, electrical machinery, motor trucks and a wide variety of other products of private industry.

A Challenge to Taxpayers

FROM an address by Mayor Harold H. Burton, of Cleveland, before the United States Conference of Mayors, in Washington, D. C., November 16, 1937:

"The decentralization of administration may have advantages if properly supported in the states, but the redistribution of the source of funds is too vital a matter to be left to experiment. To put it simply, if the taxpaying interests of the nation are seeking a change, they should also see to it that the need is actually met through state or other local agencies before serious disorders are forced upon local communities with no adequate means to prevent or to control them. Those who seek to make changes must realize the actual presence and needs of the unemployed people. . . .

"There could be no more futile or shameful procedure than for the taxpaying interests of this nation to create any impression that the Federal Government can be taken out of the work relief program before supplying some adequate substitute for that work relief on a scale that is at least state-wide. These taxpaying interests must not represent that they wish the Federal Government to shift the load through decentralization to the local communities and then appear before those local or state authorities and attempt to dodge the expense of the burden which they themselves thus shifted from Washington to their respective states and communities. Those who argue for the reduction of Federal work relief should at the same time provide a firm underwriting by the states to carry in some manner the human needs of the thousands of people thus actually cut off from every available means of earning food, clothing or shelter. . . .

"At the foundation lies the absolute necessity for the continuance at present of a clear policy of adequate relief, although the amount required has been greatly reduced during the past two years. It is the duty of the industrial cities to present the facts, without equivocation, to the Federal Government, to their respective states and to the taxpayers and voters in each area. Our cities stand today in the front line of defense of popular government in America.

"To fail to strive for recovery is treason to democracy, but to fail to so conduct our recovery program as to care for our needy men, women and children in the meantime, is treason to humanity."

Municipalities can best help this country along the road to renewed prosperity by going ahead at this time with needed improvement plans which will complete the following services essential to every modern city:

Streets and roads that are well built, well lighted, well maintained

An abundant supply of clear, safe, palatable water

Sanitary disposal of sewage and garbage

Fire and police departments properly trained and equipped

Traffic control for safety and facilitation; fewer grade crossings

Plenty of parks, parkways, playgrounds, and swimming pools

Banishment of slums, and building of well-planned home neighborhoods.

"It's Good to Hear Your Voice"

THE tinkle of the telephone is a welcome sound in millions of homes. This day, the sun will shine brighter for some one because you called.

The telephone is important in the everyday affairs of life — vital in emergencies. But that is not the whole of its service. Its value grows because it helps to keep folks closer — makes this busy world a happier, cheerier place to live in.

Friendship's path often follows the trail of the telephone wires.

LONG DISTANCE RATES ARE LOW

Your friends will be glad to hear your voice and you'll be surprised to see how little it costs to telephone Long Distance. Rates to most points are lowest after 7 P. M. and all day Sunday. Then 3-minute station-to-station calls cost 35c for about 90 miles; 50c for about 150 miles; $1 for about 425 miles.

BELL TELEPHONE SYSTEM

See Modern Transit in 24 Cities

Mayor S. S. Caldwell and N. B. Stoer of the Shreveport, La., real-estate board, survey an expanse of new homes which an electric coach line conjured out of a meadow in one year

THE AMERICAN CITY directs the attention of municipal officials to a new talking moving picture on modern city transportation which may be seen by making a request to your local transit company. The picture is entitled "Moving the Millions Electrically" and was produced by the General Electric Co. for showing before the convention of the American Transit Association at White Sulphur Springs, W. Va. The value of this picture is that in an hour's time you receive a well-rounded impression of a major type of modern city transportation as regular service in more than 20 cities.

The first scene is in Dayton, Ohio, with a trolley coach approaching. It swings to the curb in front of the entrance to the monumental home office of the National Cash Register Co., discharges its passengers onto the sidewalk, and is off again. Six transit companies serve this city of 200,000, and four of them have successively installed this type of vehicle—in 1932, in 1935, in 1936, in 1937. Public response is shown by increased patronage amounting to 20 to 35 per cent.

It is only 80 miles by crow to Columbus, Ohio, where 18 electric coaches, replacing old-fashioned trolley cars, boosted net earnings by two-thirds.

Then to Milwaukee, whose patronage of lines now served by electric coaches has jumped 50 per cent. Covington, Ky., lines up 21 brand-new coaches for a free ride to Cincinnati, which brings the public into the show from the start.

In Indianapolis in five years the new President of the American Transit Association resuscitated a bankrupt common carrier into the life of a modern city, with new vehicles carrying 55,000 more passengers per day. Plenty of pulling and hauling here, but not political, for this translation of junk into hundreds of fast, comfortable vehicles which, managed and merchandised with enthusiasm, have doubled earnings and are paying interest on bonds and equipment notes and full depreciation charges, was achieved by progressive joint action of city government and Indianapolis Rys.

The scene shifts to Flint, Mich., where 10,000 voters went 6 to 1 for trolley coaches which have boosted riding by 20 per cent. To Louisville, St. Joseph, Atlanta, Youngstown—whose councilmen and editors visited other cities before registering approval of the local plans for transit modernization including the largest electric coaches. Efficient city transportation, however, is not measured by the size of the vehicle—though roominess is a factor—but by its quick pick-up in traffic, its speed, smoothness and quiet.

On to the world's busiest airport and largest skyway and bridge, and Newark, N. J.,—center of the forward-looking Public Service Coordinated Transport—where has been developed a new type of public vehicle which operates as an electric trolley coach where there are wires, and where these cease, lowers its poles by the push of a button and becomes a gasoline-electric bus. It is called the all-service vehicle because its independence of overhead lines can keep it in service all the time wherever the business is—and there are 30 to 50 per cent more riders on these lines than there were.

Providence, Philadelphia, San Francisco—where a loaded trolley coach beats a taxicab up a 12½ per cent grade; New York City, where one four-track subway does the job of 26 six-lane highways; Brooklyn, where 100 modern street cars increased schedule speed 11 per cent and the number of passengers 36 per cent; moving the millions of Chicago, Baltimore, Pittsburgh, Boston, Los Angeles, Washington.

Good transportation is the product of men who adequately desire it. In 1935, weak from the depression and lacking a franchise for three years, the Portland, Ore., Traction Co. installed a two-block free-ride trolley-coach line which caused 70,000 voters to approve a franchise for a modern system including 140 trolley coaches. Patronage has increased 25 per cent and schedule speeds to 40 per cent.

A free-ride demonstration in Shreveport, La., in 1931, brought five trolley coaches and six repeat orders until 44 now flit through the streets of this town of 85,000 population, where it's smart to use them, as proved by a hundred per cent increase in patronage. A new suburb of 150 homes is a direct result of this modern system of local transportation, speedy, quiet, smooth, dependable.

Company General Manager Phil Vondersmith presents 21 brand-new trolley coaches to Mayor H. A. Knollman, whose daughter untied a ribbon releasing them for regular service in Covington, Ky.

HORTON RADIAL CONE BOTTOM TANKS

For Medium-Sized Tanks Also!

THE advantages of the Horton *radial-cone bottom* design are not limited to just large installations. The above picture shows a 250,000-gal. unit that was recently placed in service in Marysville, Mich. It definitely takes elevated storage out of the class of ordinary tanks even though the capacity required here is not large.

The Horton radial-cone bottom design has been used for tanks ranging from 200,000 to 2,000,000 gal. in capacity. This design lends itself well to a variety of pleasing appearing structures that are economical to produce. In all sizes, full capacity is available for use within a small range of head. Write our nearest office for information.

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Water Supply and Purification

Safety Measures for Handling Chlorine

IN handling chlorine gas containers, it is a good policy to keep protective caps in place over valves in order to prevent damage to the valves. Rope or wire slings or magnets should never be used in handling containers. It has been found best to handle small containers by means of hand trucks. When hoisting is required for one-ton containers, it is advisable to use a specially designed lifting rig recommended by the chlorine manufacturer. Scale platforms should be set flush with the floor, so that cylinders can be rolled on and off the scale without lifting. Cylinders placed upright on a scale should be clamped sturdily in position to prevent swaying or falling.

Experience in Chicago, as outlined in a paper presented by H. H. Gerstein, Sanitary Engineer, Department of Public Works, presented before the American Water Works Association, has indicated that gas leakage occurs most often while making or breaking connections and from valves. Therefore, in the design of the latest chlorinating plants for the city pumping stations, an effort has been made to reduce the number of connections and valves. The use of larger chlorine containers and higher-capacity chlorinators at the new Cermak pumping station has made possible the reduction of the number of connections and valves to less than one-tenth of what would be required had the layout of the older plants been followed where chlorine in 100-pound cylinders was used.

Gas leakages should be stopped as soon as they occur. Small leaks become larger and more difficult to control if not taken care of immediately. The old proverb, "An ounce of prevention is worth a pound of cure," can be very well applied to this point.

It is good policy to locate the chlorine and ammonia equipment in separate rooms away from the main part of the plant. There is considerable advantage in the larger installations in having the chemical containers in a room separate from the feeding equipment. The rooms in which the chemicals and equipment are kept should be provided with an efficient ventilating system capable of furnishing at least one to two air changes per minute. Chlorine gas is about 2½ times as heavy as air and therefore has a tendency to sink to the floor and accumulate in low places. On the other hand, ammonia is about one-half as heavy as air, therefore having a tendency to rise and dissipate fairly rapidly. Consequently, the ventilating system for rooms in which chlorine is stored should allow air to be taken into the room at a point near the ceiling and be removed from the lowest point; and conversely for ammonia gas, the air should be taken into the room near the floor and evacuated at a point near the ceiling. A combined system in which air is forced into the room by means of a pressure fan and at the same time removed from the room by a suction fan is very satisfactory for clearing rooms of gas leakage. It has been found advantageous to have the suction fan discharge through a high stack in order to obtain rapid dissipation of the gas fumes.

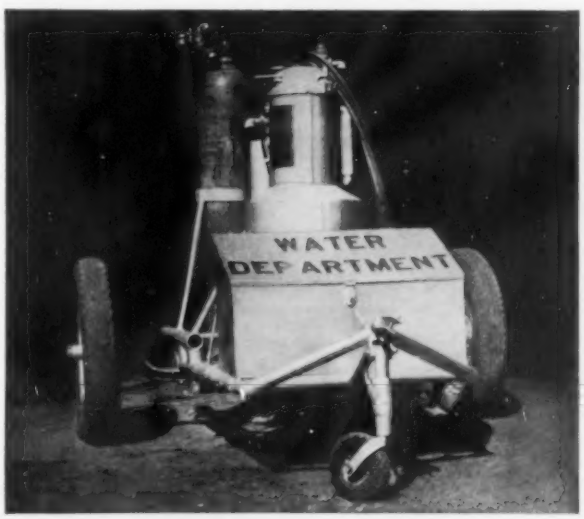
Welded Trailer for Welding Equipment

BECAUSE the oxyacetylene apparatus of the Water Department was needed at so many different parts of the city, the City Manager of Rapid City, S. Dak., A. S. Holm, arranged with S. W. Swanson, Superintendent, to design a trailer suitable for the transportation of the oxygen and generated acetylene. The trailer accommodates one oxygen cylinder and one portable medium-pressure type acetylene generator. A metal box is included to house the regulators, blowpipes and hose when not in use. This box is provided with a hinged clasp so that it can be locked.

The trailer is light, compact, portable and inexpensive. All parts going into its construction, except one wheel, were salvaged material, welded and cut to the proper shape and assembled to form the chassis. The axle and rear wheels were taken from an old automobile. The small third wheel, at the front of the chassis, in the illustration, was purchased.

The coupling unit, on the front end, is of the swivel type. When this is raised into position on the rear end of a passenger car or truck, it lifts the third wheel off the ground. The chassis is slightly underslung and provided with small springs of the cantilever type that join on both sides of the axle. This feature, combined with the pneumatic tires on the wheels, overcomes all objectionable vibration and contributes to the ease of handling.

The third wheel on the front end acts as a support when the trailer is not attached to a car. This gives the trailer perfect balance and portability for position changes when the work at hand requires it. The weight of the oxygen cylinder and of the generator is supported mainly by the rear axle. This enables one operator to lift the front of the trailer and easily push it or pull it whenever he desires. It is no uncommon sight to see this trailer being towed down the road at 50 miles an hour.



AN OXY-ACETYLENE WELDING TRAILER USED BY THE WATER DEPARTMENT OF RAPID CITY, S. DAK.

Four Cents a Ton

DESPITE the fact that its principal source of water supply is some 250 miles distant from the city, water rates in Los Angeles, Calif., are substantially lower than in most large cities of the nation, many of which have virtually unlimited supplies "at their back doors."

About four cents a ton is the charge to local consumers by the municipally-owned water system in Los Angeles. That cost is five cents a hundred cubic feet less than the average amount charged by 183 of the largest cities in the United States.

Low rates naturally encourage the generous use of water, and are responsible in no small measure for Los Angeles' reputation as a city of beautiful homes and gardens. Situated on the edge of a desert, Los Angeles fully realizes the value of water. Purity, low cost and adequate supply are major objectives.

Approaching Centennial

IN 1942 a century will have passed since the opening of the first Croton aqueduct which brought the impounded waters of the Croton River to New York City. The completion of this great undertaking was so important an event in the future development of New York City that it deserves to be fittingly celebrated. The far-sighted engineers who planned the ambitious project should be remembered in the centennial celebration.

Quenching the THIRST OF INDUSTRIES

Quenching the thirst of today's great industries is truly an amazing accomplishment. For man, machines and materials, there can be no shortage of water. So wherever you find deep wells and pumping equipment, you will most often see the name of Layne . . . a symbol of mature engineering skill, the toughest wear-resisting quality and an always dependable record of operation. We could ask no finer indorsement than to see our name so closely identified with Industries—nor could we offer you a greater guarantee of our service and water supply equipment.

Available for distribution are all kinds of literature that fully explain our services of designing and installing water supply equipment. Please address

LAYNE & BOWLER, Inc.
Dept. B,. Memphis, Tenn.

Listed below are the names and locations of our affiliated companies who are completely equipped with all modern well drilling and pump installation facilities.

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LAYNE-NEW YORK CO. . NEW YORK CITY.
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LAYNE-TEXAS CO. . . . HOUSTON, TEXAS.
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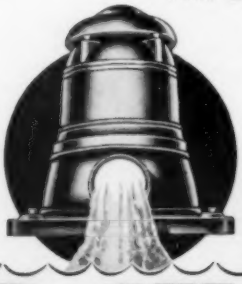
LAYNE-BOWLER NEW ENGLAND COMPANY, BOSTON . . . . . MASSACHUSETTS.
INTERNATIONAL WATER SUPPLY, LTD., FORT ERIE, N. . . . ONTARIO, CANADA.



LAYNE PUMPS
WELL WATER SYSTEMS

Municipal Airports and Airways

Airways Institute Fight Against Yellow Fever

IN the fight against communicable diseases it frequently happens that control measures are developed which are entirely adequate for the time being, but later new conditions arise which make additional protective measures necessary. Before it was known that yellow fever was transmitted by the mosquito, the United States was subject to frightful ravages by this disease, some of which occurred less than half a century ago. After the epoch-making investigations and discoveries by Dr. Walter Reed and other medical officers of the United States Army, later confirmed and amplified by other workers in this country and abroad, and the subsequent application of their contributions to the knowledge of the epidemiology of the infection, yellow fever became a vanishing disease and was soon entirely eliminated from North America and from the ports of the entire Western Hemisphere. However, with the presence of jungle yellow fever in South America, the possibility of an animal reservoir and of the existence of yet unknown vectors of the disease in nature, and with the quick passage of airplanes from South American countries where this type of yellow fever persists, the possibility of the re-introduction of the disease into North America becomes something of more than of mere academic interest.

A note was recently published in the *Public Health Reports* of the U. S. Public Health Service, and reprinted in THE AMERICAN CITY, showing that in 24 of 69 inspections of airplanes arriving at Miami, Fla., from South American ports, 53 insects were captured and 1 escaped. In 7 of these 24 inspections, 13 mosquitoes were found. While no yellow-fever mosquitoes (Aëdes aegypti) were discovered, the possibility of their importation is evident.

Under date of April 21, 1937, Medical Director J. D. Long, of the U. S. Public Health Service, reported that the Pan American Airways, Inc., had instituted the following control measures:

1. All flying personnel not already vaccinated against yellow fever will be vaccinated here in Rio de Janeiro at the Rockefeller laboratory.

2. Beginning May 1, 1937, cards will be filled out for all passengers which will show where they have been or have resided for the six days just prior to embarking en route to the United States. These cards will be attached to the passenger list of the airplane and will be available to the Quarantine Officer on arrival at destination.

With such cooperation, the U. S. Public Health Service may pursue its efforts to eliminate this new hazard with every prospect of success and without unduly restricting the utilization of our newest and fastest means of transportation.

Flight-Strips Progress

THE American Flight-Strips Association has reported that Flight Strips have received favorable consideration by more than sixteen states, four Federal agencies and five interstate or national organizations. Many governors of those states whose legislatures will be in session this winter are expected to consider the enactment of uniform State Flight Strip Acts to insure more rapid progress in the development of Flight Strips by their State Highway Departments.

In order to insure uniform action, a uniform State Flight Strip Act has been drafted, after many months of study, with the cooperation of state, county, district and city officials. The proposed uniform act outlines a definite program for state procedure. It is understood that some members of Congress plan to introduce bills in the next regular session of Congress to encourage Federal aid for Flight Strips through the United States Bureau of Public Roads, similar to the Government's participation in highway construction and maintenance projects. Federal aid would go to those states that are prepared to further state-wide Flight Strip programs. The Economic Highway Planning Surveys for facilities which are now being made in 44 states include the study of sites adaptable for Flight Strips.

Flight Strips in Indiana

FLIGHT Strips as a part of the state highway system of Indiana have been made possible by Enrolled Act No. 253, House Acts of 1937, passed by the General Assembly of the state of Indiana. This Act states in part:

"The State Highway Commission either by grant or condemnation is hereby authorized and empowered in the name of the state to acquire along the highways in the State Highway System tracts of ground not exceeding three acres in extent for recreation and picnic grounds, tracts of ground not exceeding one mile in length and one thousand feet in width for landing fields or landing strips, to be acquired and paid for in the same manner that right-of-way for such highways is acquired and paid for, excepting that the fee simple title shall be taken thereto. Such tracts shall be under the jurisdiction of the State Highway Commission. * * * The cost of maintaining all such tracts of ground shall be paid out of the funds appropriated to said Commission for the maintenance of highways."

State Interest in Municipal Airports

THE Federal Government has licensing power over ship, pilots and airports for the national civil airways and interstate service. The states have local supervision and policing of air transportation and the designing, construction, maintenance and operation. State legislatures this past year have showed alertness to the pressing airport problem. Idaho's new law permits municipalities to acquire up to 1,280 acres of land for port purposes; Nebraska set aside $8,500 for an airport survey and $6,000 for airmarking the state; Florida counties received the right to acquire airports; Tennessee created an aeronautics board and appropriated to that board the tax paid on aviation gasoline; Utah declared airport operation a public purpose, and allowed issuance of bonds and levying of taxes for airports, with the airplane gas tax to be used for airport improvement; Illinois gave Chicago power to construct a port; California and Colorado created state aeronautical boards.

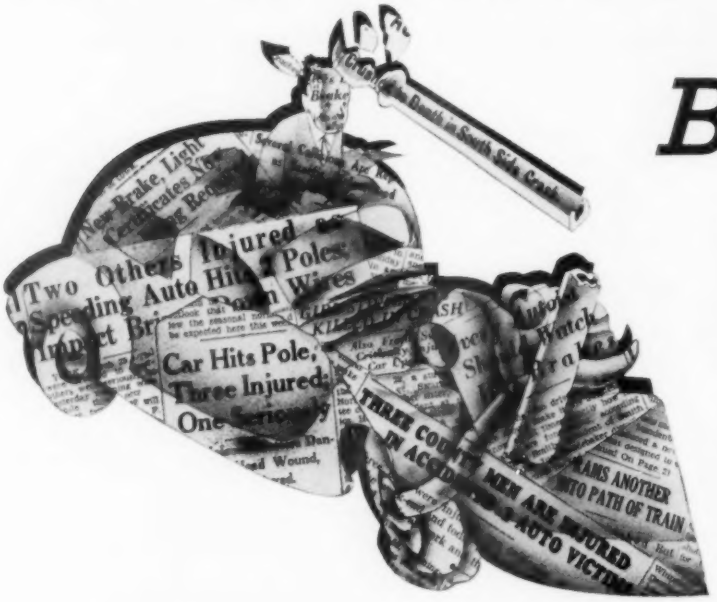
Cities Must Act Now for Skyways of Future

THE public demand for better airports in three of the nation's largest cities, New York, Chicago and Washington, focuses attention on a problem which cities must face now if they expect to be important links in the skyways of the future. Large luxury liners, increased traffic and heavier airmails occasionally overtax the inadequate facilities of existing airports to the danger point, and if cities mean to enlarge or relocate their airports, some uniform plan must be devised to preserve the unity of the civil airways system.

Cities' demands for airport development vary. New York City, for instance, has before it a plan for a super-airport at North Beach, Queens, to cost $12,762,500 for initial work, and designed both for land and seaplanes. Chicago has sought to expand its present port, to shift an adjacent railroad right-of-way, and is considering still another proposal to lay out a new port on made land jutting into the lake-front. The Washington, D. C., airport for years has been admittedly inadequate, and commercial pilots recently notified the Department of Commerce that they refused further to assume responsibility for landings and take-offs there. The Washington airport has only one adequate runway and it is intersected by a public road.

Washington's problem is not unique. Few cities in this country have adequate runways or other facilities to take the projected large air liners, some of which are 40-passenger, 60,000-pound ships with flying speeds of 240 mph and landing speeds of 68 mph. They will require wide paved runways of 4,000 to 5,000 feet when they go into transcontinental service, as planned in 1938. Few cities have such runways, even those with the nation's largest airports. Pittsburgh's longest runway is 3,500 feet; Boston's, 4,000; Flushing's, 3,000; Columbus', 3,500; San Francisco's, 3,000; and Los Angeles', 3,650.

TOO BAD YOU CAN'T INSPECT BRAINS AS WELL AS *BRAKES!*



AS long as there are folks driving who *don't* care whether their cars are in safe condition or not, those of us who do care about traffic safety have to put up with the regular Monday Morning Shudders when we read our newspapers.

But car inspection will help enormously. It's been proved too many times to be subject to argument. And when you decide to go in for car inspection, there's a whole setup of quality equipment available at moderate cost, developed and backed by the world's leading authority on the subject of car-stopping—Bendix.

Bendix Civic Safety Clinic Equipment eliminates guesswork. It tests brakes swiftly and accurately—each wheel-brake getting its own precise reading. It tests steering and wheel alignment. It takes care of a car a minute and requires no special expert personnel. Bendix Equipment is used by the car manufacturers themselves for final new-car inspection and adjustment.

Civic Safety Line plans and procedures, fully worked out, available, with cost estimates. Write (use the coupon for identification) today!

...*then this* BENDIX EQUIPMENT could end *all* traffic accidents!

LEFT: *Tests each brake separately—by full wheel revolution under electric power . . . shows total stopping ability . . . shows up "out-of-round" drums. TESTS TRACTOR AND TRAILER TRAINS accurately.*

RIGHT: *Tests wheel alignment, caster, camber, toe-in, entire steering geometry, precisely and quickly. Shows exactly work needed. Nothing left to guesswork.*

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BENDIX

CIVIC SAFETY CLINIC Equipment

Car Tracks—Rubber Paving—City Engineers

The Removal of Street-Car Tracks

A SCORE of years ago, street-car companies were required almost invariably, either by state law or by local franchise, to maintain in good repair the areas of streets occupied by their tracks and the under-structure thereof. Such street-repair costs were an inherent obligation of the company. That was before the day of widespread bus competition, which in recent years has revolutionized municipal transit facilities. The extent of the change is evidenced by statistics. In 376 cities of over 25,000 population, all of which were once served exclusively by trolley lines, 144 are now served exclusively by buses, and 202 by combination street-car and bus lines.

When bus lines supersede trolleys, rails deeply imbedded in the street become valueless because their salvage value does not compensate for removal cost. Yet they are a nuisance to the public and often become an actual traffic peril. And so, in dozens of communities, there has arisen the ticklish question: Who is to pay for track removal—city or transit company?

Trenton, N. J., offers an excellent example of the magnitude of this problem. Some years ago, buses were substituted for street cars in Trenton, the contract requiring the company to remove its track only if and when the city undertook paving operations. During 1936, under this contract, the company removed 8 miles of single track. But 40 miles remain, presenting a real problem for which no solution has been found. With the thought that other cities might face similar problems, Joseph E. English, Public Works Director, Trenton, N. J., sent questionnaires to 50 representative communities. He received 37 replies, indicating unmistakably that Trenton's dilemma, in one or another aspect, is fairly common throughout the country.

Only twelve of the cities replying to the questionnaire indicated that local franchises established a clear obligation for the company to remove its tracks and repave the street once trolley lines were abandoned. These cities were Austin, Dallas and San Antonio, Texas, Durham, N. C., Charleston, S. C., Hartford, Conn., Minneapolis, Minn., Richmond, Va., Salt Lake City, Utah, Springfield, Mass., Toledo, Ohio, and Wilmington, Del. But in some of these cities even the replies showed that tracks were not removed outright. In a few the grooves of the rails were simply filled with asphalt; in others, rail heads were burned off and a thin resurfacing applied.

In four cities, Binghamton, N. Y., Bridgeport, Conn., Cleveland, Ohio, and Spokane, Wash., the company was obligated only for removal of the tracks and not for repaving. In Schenectady, N. Y., and Worcester, Mass., the companies were in receivership, and the city had to defray all costs; and, for one or another reason, the city also did the work in Asbury Park and Camden, N. J., Canton, Dayton and Springfield, Ohio, Grand Rapids, Mich., Syracuse and Utica, N. Y., and Tulsa, Okla. In several of these cities Federal aid was given through FERA or WPA.

In other reporting cities, the problem still is unsettled, or track removal and repaving has been accomplished only as the result of long-drawn-out negotiations. In Erie, Pa., for example, WPA furnished the labor, and the company paid $50,000 for the sponsor's share. The city put up $16,500, which was more than made up by sale of 3,000 tons of salvaged steel at $9.35 a ton. Several other cities reported sales of salvaged steel, Dayton, Ohio, receiving a top price of $12.75 a ton. In connection with the Erie situation, the Pennsylvania law makes it the duty of the State Public Service Commission to refuse permission to abandon street-car lines unless the tracks are removed and the street repaved uniformly.

In some states the problem of forcing companies to contribute to track removal has been complicated by the fact that as early as 1920 various legislatures began to relieve companies of part or all of their paving obligations. Such relief measures have been enacted in Connecticut, Indiana, Iowa, Massachusetts, Montana, New Hampshire, Rhode Island and Utah.

Rubber Paving Tested in U. S. S. R.

FOR some months a pavement of black and brown rubber has been under test at the entrance to a large plant, where traffic is very heavy, in Moscow, Russia. After nine months, during which time the pavement has carried thousands of trucks and wagons, and track-laying tractors have been run during the entire night, the experiment has been declared successful, according to a report from the U. S. Bureau of Foreign and Domestic Commerce.

The pavement is noiseless, it is said that neither snow nor ice remains on it in winter, and it is easy to wash. The Moscow City Council is now negotiating for the laying of rubber pavements in one of the large sections of the city.

City Engineers' Duties and Responsibilities

THE average municipal engineer is in reality a veritable "Jack of All Trades," and in a general way he has to acquire and administer a wide variety of engineering subjects. In addition to his engineering knowledge, he is called upon to administer certain legal acts and to have a good grounding in finance. On top of this, he has to be able to express himself in public so that the handling of his various projects will be clearly understood. Above all, he has to possess an unusual amount of good, sound common sense to enable him to deal with his council and the citizens at large.

Municipal councils and the citizens generally are hard taskmasters, and the municipal engineer will do well to try to place himself in the position of a member of the council or of a taxpayer before unduly criticizing either. The municipal engineer must recognize that he is the servant of the public and as such it is his duty to give the public the best service of which he is capable.

—From a lecture on "General Municipal Engineering," by WILLIAM STORRIE, of Gore, Nasmith & Storrie, consulting engineers, Toronto, presented to the School for Municipal Officers, University of Western Ontario, and printed in *Engineering and Contract Record*.

NO. 10 CATERPILLAR DIESEL AUTO PATROLS WORKING ON AN OIL-MIX SURFACE FOR A RESIDENTIAL STREET IN CHEYENNE, WYOMING

ELEMENTS of PUBLIC SAFETY

GAMEWELL

THREE-FOLD FIRE ALARM BOX

Not more than 500 feet to the nearest box in closely-built residential districts . . . convenient to every group of buildings, manufacturing establishments, and institutions in sparsely-built districts . . . in congested high-value districts — *"A Box a Block"* — with special attention to Life Hazards . . . a safe rule to follow.

THE FIRE LOSS

A MONUMENT TO NEGLECT

When property is destroyed by Fire, the community loses and everyone in it loses. The only way for a community to protect itself against loss of wealth—and prestige—brought about by fire is to keep the fire losses low. There will always be fires—and the problem is to extinguish them while they are small. The fire department will accomplish this if given the alarm in time.

A dependable, swift and accurate means for notifying the fire department of the existence and exact location of fire will solve the problem. The Gamewell Fire Alarm System with sufficient alarm boxes to adequately protect the community is necessary for the public welfare and is the world's recognized standard of excellence in fire alarm signaling.

EXEMPLAR POLICE BOX

Police Signal Systems provide . . . adequate patrol of policed areas . . . secrecy in police communications . . . prompt assistance in emergencies . . . direct connection with police department for banks, commercial establishments and residences . . . the basic element in communications . . . enabling the police forces to attain the highest degree of operating efficiency.

Write for descriptive literature.

THE GAMEWELL COMPANY

NEWTON UPPER FALLS, MASSACHUSETTS

Public Safety

Motorized Police

NINE divisions of the Miami, Fla., Police Department operate 22 passenger cars, 5 trucks, 1 Servi-car, and 22 Harley-Davidson motorcycles, 15 of which have just been delivered. All are equipped with radio: 10 cruisers with two-way and 12 officers' cars with one-way; all motorcycles and trucks, one-way.

The trucks are as follows: one Reo patrol; a Reo and a Ford for street-name signs and similar work; two Fords on signal maintenance and parking meters.

The Chief of Police, the Assistant Chief and the Chief's investigator each have a sedan equipped with one-way radio. The Detective Bureau has four cruisers and the Chief's detective sedan. The other cars are operated as follows: two by the Auto-Theft Bureau; one by the Bureau of Identification; two coupés by the Traffic Bureau; four by the Motor Patrol Bureau; and five by the Accident Prevention Bureau.

Our Accident Prevention Bureau is one year old, and is a valuable unit. Its personnel attended a school conducted by Lieut. F. M. Kreml and Sergeant Van Orsdell of the National Safety Council and had to make a passing grade to be eligible for service. Lieut. D. G. Reynolds, who is in charge of the Bureau, also graduated from the nine-months traffic course at Northwestern University. These men have accomplished a great deal through proper investigation of every accident and by prosecution of violators. A good job of education has also been going on by radio, newspapers and civic organizations.

The motorcycle division has had its ups and downs. In 1925-1926, we had 65 motorcycle men. This number was decreased at different times, getting as low as 10. However, we have found that motorcycles are absolutely indispensable in controlling traffic today, and we fully intend increasing the number as rapidly as finances permit. There are now 22 men in this unit.

M. A. TIBBITS,
Lieutenant, Motorcycle Division, Police Department, Miami, Fla.

What Money for Police Radio?

HERE are 10 municipalities to tell you that there are more ways to obtain money for police radio than by waiting until the General Fund opens its heart. This information is furnished by courtesy of RCA.

Chillicothe, Ohio, by private subscription through the efforts of the Mayor and Chief of Police. The system was installed in 1934 and two cars are equipped. Says Chief Ben W. Rout today: "Radio has expedited police work and tended to reduce crime."

Geneva, N. Y.—The Police Chief explained the purpose of the radio installation to public-spirited citizens and with a top limit of $10 personally collected the fund about a year ago. It is two-way. The radio-equipped car is shown on this page. Says Chief R. W. Morris: "We know that the police service has been greatly improved."

Huron, S. Dak., through local subscription of nearly all the business men, giving from $5 to $50, raised the money in two weeks, installed the radio in August, 1936, and has two radio cars. Writes Police Chief S. J. Nelson: "Previous to the short-wave radio, we used a red light at night, and in the daytime a sort of hand would wave up and down. This signal was placed on the roof of our tallest building; though it could not be seen from all parts of the city, we got by with it for several years. The radio has held down crime to a certain extent, as it is now 'Better to be careful, because it don't take the police very long to come.' Especially the boys used to watch the light. As soon as it would come on, they would say, 'Let's get out of here, the red light is on.' So when the police arrived, the boys were gone. With the radio, they do not know the police are coming; consequently, we have caught up with several whom otherwise we should not have caught. Prior to the radio, our trouble was to get the message to the patrolman. Now we are in constant touch with him, and we can dispatch a call to him and have it handled in the best way possible. I don't know how we operated without it."

Pontiac, Mich., raised funds for a two-way radio by a police dance and by general subscription.

Pueblo, Colo.—The Police Commissioner saved the sum from last year's appropriation.

Roselle, N. J., raised funds by a raffle and running a moving-picture show and carnival. Some assistance was given by the borough itself.

St. Augustine, Fla., sponsored a dance supported by merchants.

Savannah, Ga.—The Police Department agreed not to appoint new members to fill ten vacancies next occurring subsequent to the purchase of the radio until after its purchase price had been equaled by the sum of the salaries thus saved. This has been accomplished.

South Bend, Ind., through police subscriptions of policemen and merchants.

Wheeling, W. Va., raised $12,000 through public subscription.

MOTORCYCLE DIVISION OF THE POLICE DEPARTMENT OF MIAMI, FLA.

NOW: SKIP-PIPE

FOR SUB-DRAINAGE

A Cast-Iron Under-Drain Pipe constructed on an entirely new principle that is creating the keenest interest among engineers and public works departments. After exacting tests conducted under field conditions, these results have been thoroughly established:

- Operates by gravity flow and not by hydrostatic pressure: It builds up no head.
- Utilizes maximum capacity: Perforated Pipe never utilizes more than 60 per cent of capacity.
- Takes off from 2½ to 3 times as much water in a given time as Perforated Corrugated Steel Pipe.
- Begins draining much sooner than Perforated Pipe.
- Finishes draining long before Perforated Pipe.
- Lasts indefinitely — almost as long as virgin ore.
- Is easily laid, or replaced: Clogging is very improbable under any conditions.

SLOPING KRADLE INVERT PIPE

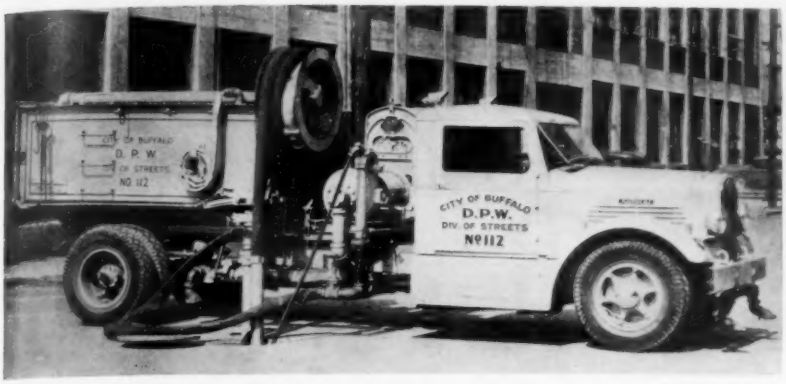
PATENTED U. S. A.

SEND FOR 12 PAGE BROADSIDE FOR COMPLETE DETAILS

DIMICK-MOSHER PRODUCTS COMPANY

120 BOYLSTON STREET, BOSTON, MASSACHUSETTS

Street Cleaning and Snow Removal



NEW AUTOCAR CHASSIS WITH ELGIN EDUCTOR AND SOUTH BEND FLUSHER OWNED AND OPERATED BY THE DEPARTMENT OF PUBLIC WORKS, BUFFALO, N. Y.

STREET FLUSHING, 1926-36

Year	Street Mileage Flushed	Quantity of Water Used Gals.	Total Cost	Cost per Mile
1926	1,615	8,950,000	$5,255.41	$3.25
1927	1,294	7,173,550	4,195.93	3.24
1928	2,002	9,563,600	6,379.65	3.18
1929	2,740	15,229,000	8,427.82	3.07
1930	3,931	20,230,000	12,809.06	3.26
1931	6,037	34,392,000	15,689.01	2.51
1932	4,492	25,465,000	12,313.02	2.74
1933	4,352	19,690,000	9,714.57	2.23
1934	6,687	24,818,000	10,747.48	1.61
1935	5,925	22,795,000	9,737.86	1.64
1936	6,747	20,233,000	9,944.37	1.50

Machine Handling in Toronto

MACHINE flushing is generally recognized as a most effective aid to the street-cleaning service. Many cities have adopted this method in conjunction with hand-broom sweeping. Owing to the heavy traffic conditions which prevail in Toronto, all flushing during 1936 was undertaken during the night between the hours of 10 P.M. and 7 A.M., the flushers working in pairs on a twice-weekly schedule. Toronto has six flushing units and desires an additional four units which would permit cleaning all the streets at least twice each week. The table above shows the street mileage flushed and the cost of flushing per mile for the past two years in Toronto.

Street-Cleaning Success Depends on the Citizens

THE kind of people that live in a city determine what kind of housekeeping job that city has to do, because the quantity of dirt that finds its way into the streets depends in a large part on the character and habits of the people. Just as the homes of some people become dirtier and more untidy than do those of others, the streets of some cities or of some city areas become dirtier and more disorderly than do those of other places, states a recent report of the American Public Works Association.

At least half of the dirt and foreign matter on pavements or sidewalk surfaces and on the parked strips is classified in the A.P.W.A. survey as "man-created waste." This term includes refuse discarded by pedestrians and from vehicles; sweepings from sidewalks and buildings; droppings from overloaded or defective truck bodies; and from débris from construction operations.

The other half is "natural dirt"—that is, dirt blown through the air; sand and clay tracked by vehicles and pedestrians and carried into streets by rains; particles from the wear of pavements, vehicles and tires; and leaves and branches from trees and shrubbery.

The civic advantages of good city housekeeping are many. Spotlessly clean streets, neat lawns and gardens and orderly alleys attract new residents, more visitors and new business. Some European cities, and such diverse American cities as Holland, Mich., and Washington, D. C., are cited as approaching ideal conditions of cleanliness and neatness, as well as some of the higher-class residential suburbs.

SIDEWALK PLOWING IN CITY OF L'ANSE, MICH., WITH A CATERPILLAR TWENTY-EIGHT AND A LA PLANT-CHOATE PLOW

The 30 miles of sidewalks were cleaned in 10 hours. This outfit uses 2¼ gallons of fuel per hour

SHASTA CITY, CALIF., HIRED THIS ALLIS-CHALMERS TRACTOR WITH AN ATECO BULLDOZER TO CLEAR 5-FOOT DRIFTS FROM THE CITY STREETS LAST MARCH

With Trail Blazers In Every Land

Location is never a hazard for a Barco Portable Gasoline Hammer. Barcos accompany the world's trail blazers to the far corners of the earth. They have won their service stripes in the virgin forests of the northern country and the smoking jungles of the tropics.

The Barco illustrated here is being used to drill boulders for blasting in a location inaccessible to any other type of mechanical equipment. And, from Sumatra, Dutch East Indies, comes praise for a heavy-duty Barco that has broken nearly 10,000 tons of gold ore in equally hard-to-reach territory.

Amply powered to perform any hammer job quickly . . . requiring little more space than a pick axe for transportation or storage . . . a Barco Portable Gasoline Hammer can be used wherever the operator can find a foothold and elbow room.

BARCO MANUFACTURING COMPANY
1803 Winnemac Avenue **Chicago, Ill.**

BARCO *Portable* GASOLINE HAMMER

During December we hope you will remember to mention THE AMERICAN CITY.

DECEMBER, 1937

Vol. LII, No. 12

The American City

470 Fourth Avenue
New York

35 Cents, $2 a Year

Six-Hundred-Dollar Investment Continues $3,600 Annual Savings

Improvements in Vicksburg, Miss., Water Works Reduce Chemical Costs

By THEODORE REED KENDALL
Engineering Editor, The American City

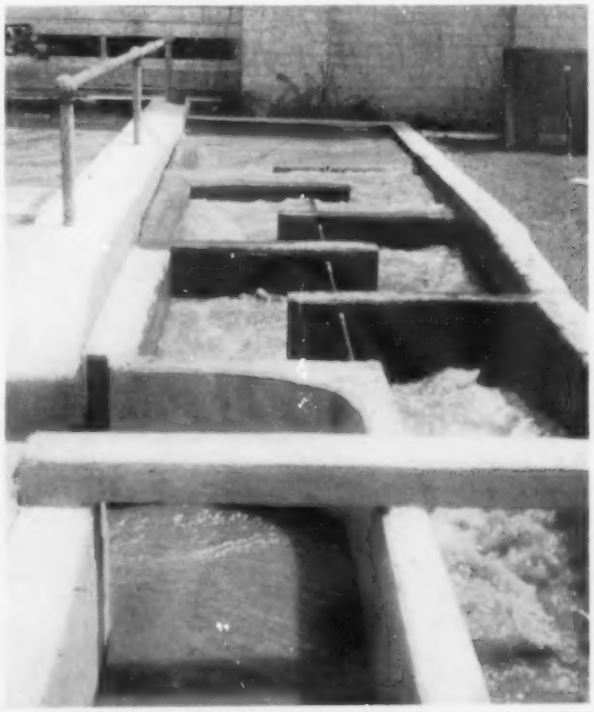
THE Water Department of Vicksburg, Miss., took the bull by the horns in 1933, and decided that it was high time to reduce the excessive cost of chemical treatment of the Mississippi River water and the apparent waste of the chemicals which remained undissolved in the coagulation basin. The obvious way out was to provide better mixing of the chemicals so that they would go into solution, and use all of the chemicals in the formation of the floc to clarify the water.

Better Mixing Brings Results

A 12-inch riser from the raw-water low-lift pumps delivers the water to the primary settling basin, where the heavier sediment quickly settles out as it flows through the basin, which measures 102 feet long and 31 feet wide, with an average depth of 13 feet. This chamber and the three-compartment settling or coagulation basin adjacent are cleaned at periods of 60 to 120 days, depending on river conditions. When they are cut out for cleaning the water goes directly to the chemical house, and then to the second portion of the coagulation basins, which have four sections, the first of which acts as the primary settling basin under these conditions.

When the overhauling was under way in 1933, the old method of simply applying the chemicals by solution feed through a water-wheel-driven Savage-Gauntt dry chemical feed machine was supplemented by improved mixing for the solutions. A trench was dug outside the coagulation basin walls and a mixing chamber 120 feet long, 3 feet deep, and with seven baffles of the around-the-end type spaced 26 inches apart at the upper end, was built. An 18-inch opening was left at the end of each baffle, which gives the water a violent stirring action and increases the mixing efficiency greatly. The water from the seven baffles then flows the full length of the 120-foot detention channel and back, and at the end of that time the formation of a good floc is evident. The total loss of head in the mixing chamber and channels is about 24 inches.

This mixing chamber and channel, suitably designed to serve the dual group of basins either individually or jointly, is credited with the continued savings of $3,600 a year in the cost of chemicals applied for the clarification of the water. The cost of construction of the mixing chamber, which has required no further maintenance expense, was about $600. At the present time another pair of Savage-Gauntt dry feed machines is being installed with electric motor-drive instead of the water motor-drive of



THE NEW MIXING CHAMBER
The chemically treated water enters the mixing chamber from the building in the background, flows forward on the right and returns on the left to enter the coagulation basins

PROTECTION AGAINST FLOODS
In the foreground and at the far end of the two buildings are concrete sea-walls with access openings slotted for the stop planks used during high water. At the left is the end of the coagulation basins, the filter building and clear well, while on the right is the pumping station

the older machines. These new machines permit greater fineness of adjustment, and it is expected that even greater savings of chemicals will be possible in the future.

Sulphate of iron is added to the raw water after the primary settling at rates varying from 250 to 1,000 pounds per million gallons of water, while the lime varies from 150 to 500 pounds per million gallons.

Coagulation Basins

The coagulation basins provide a 13-hour detention period when both are in use. Each basin is in three parts, with an extra section for the second basin, as mentioned above. Each division of the basins is 40 feet wide, and the water in passing from one section to the next goes through two 5-foot square holes located about 10 inches below the surface. The water is 12 feet deep in the basins.

Filters

There are six filters, four measuring 14 x 21½ feet and two measuring 10½ x 21½ feet. The filters are washed every 24 hours to remove the accumulation of fine floc that is carried over from the final section of the second group of settling basins. The gravel in the filters was renewed in 1933 and put in three graded layers instead of the two that had formerly been used. The gravel is 18 inches thick, and the new sand beds of filter sand, which replaced the Mississippi River sand originally used, are 24 inches thick. Jewell filter underdrains are used.

Chlorination

The water from the filters flows directly to the 884,000-gallon covered clear well around which the water flows to the high-pressure pump intakes. The water was formerly chlorinated as it entered the clear well from the filters, but this has been changed to applying the chlorine at the rate of 6 pounds per million gallons at the suction of the pumps, using a Wallace & Tiernan solution feed chlorinator.

Service

The average consumption of Vicksburg is between 2 and 3½ mgd, with the higher consumption coming in the hottest and coldest weather. A pressure of 135 pounds is maintained on the mains, regulated by a 140-foot by 20-foot diameter standpipe, with a top elevation of 410 feet, near the center of the city.

Pumping Equipment

Inasmuch as the variation of flow in the Mississippi River at Vicksburg may be as great as 65 feet between extreme low water and the highest flood, as that in 1927, not only must provision be made to get water from the river at the lowest stage, but the plant must be protected from the high flood waters, and pumping facilities still be maintained.

The standard pumping equipment in the pumping station for low-lift consists of two 4-mgd Worthington volute pumps driven by 60-hp Westinghouse induction motors, located in a deep pit outside the station. Either of these pumps is capable of supplying the entire needs of the city when the river is above 8 feet. To care for pumping at extreme low stages of the river, the water works has constructed a movable pump house on a marine railway which permits the electric and gasoline engine powered standby pumps to be lowered down the bank as the water recedes in the river during drought conditions. This equipment is used only when the water is below the 20-foot stage. The pumping equipment in the portable pump station consists of a 10-inch Fairbanks-Morse centrifugal pump of 3-mgd capacity driven by an 85-hp F-M motor. Also, a Worthington 4-mgd centrifugal driven by a Continental gas engine is mounted in the movable pump house for standby service in case of failure of the electric service.

A permanent discharge line is laid down the slope within the rails of the marine railway, with Y's set into the 12-inch pipe at intervals for connection with the pump discharge. These pumps are connected with the 12-inch line running to the settling basin.

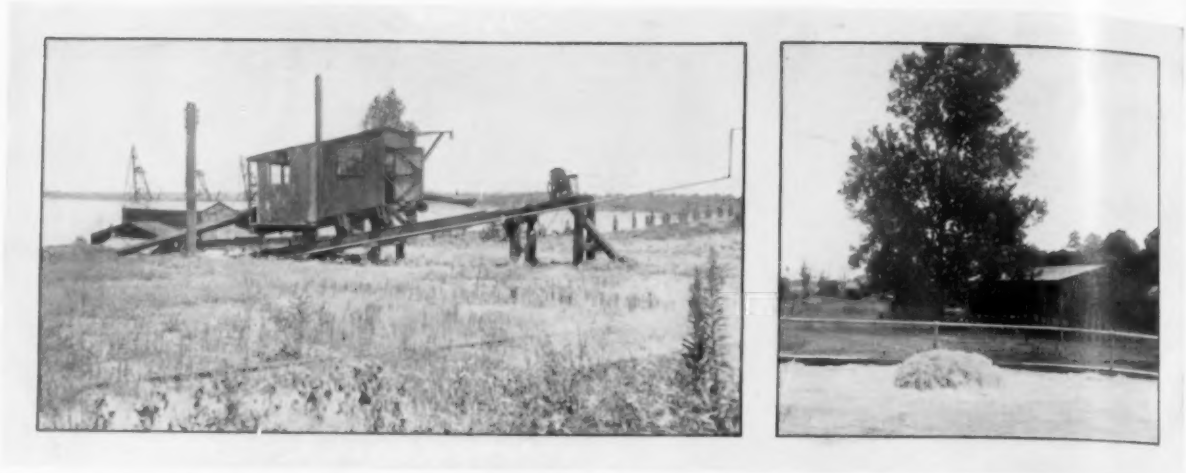
High Pressure

The high-pressure service to the city is maintained by three Worthington 8-inch volute pumps each of 3.5-mgd capacity and direct-connected with a 250-hp motor and one 2½-mgd Worthington centrifugal pump direct-connected with a 150-hp General Electric motor.

The discharge pressure is 135 pounds. The pumps are alternated in service, one being run continuously and the 2½-mgd pump being run either as a companion to the larger unit during a portion of the daylight hours or singly during the night. Electric power is purchased from the Mississippi Power & Light Co.

AN AIRPLANE VIEW OF THE VICKSBURG WATER WORKS

This most unusual photograph, taken by the Federal Engineering Department, Vicksburg Engineering District, U. S. Engineer Department, shows the degree to which the floc in the settling basins settles out as the water flows sucessively from left to right. The sloping pair of tracks in the foreground carries the low-water pump down to the Mississippi River during low stages



THE PUMP HOUSE FOR LOW-WATER PUMPING AT THE VICKSBURG WATER WORKS, AND THE DELIVERY OF RAW WATER TO THE PRIMARY SETTLING BASINS

Steam Equipment

Steam equipment is maintained in reserve. The high-pressure service consists of a Snow horizontal cross-compound 20 x 44 x 13½ x 36-inch double-acting pump of 5-mgd capacity, and two low-lift pumps in a pit within the station. One of the low-lift pumps is a 3-mgd DeLaval centrifugal driven by a steam turbine, and the other is a 4-mgd DeLaval connected through rope-drive with a Morris piston valve cross-compound engine. There are two 185-hp Casey-Hedges fire tube boilers with blow-offs set at 150 pounds. The steam piping is arranged as parallel headers, and both connect with each pump and boiler.

Personnel

The Water Works of Vicksburg, Miss., are operated under the direction of the Board of Aldermen acting as a Committee of Whole, J. C. Hamilton, Mayor and Alderman, J. M. Buchanan and J. J. Williamson, Aldermen. E. S. Gullett is Chief Engineer of Operation, and W. H. Dupre, Consulting Engineer on the various improvements.

Nation-Wide Zoning Conference This Month

A NATION-WIDE zoning conference to be held in Chicago on December 13 and 14 has been called by Secretary of the Interior Harold L. Ickes, acting as Chairman of the National Resources Committee. The Committee hopes that representatives of city and county zoning commissions and planning boards as well as state planning boards, Federal bureaus and unofficial groups will attend. All phases of the question will be discussed by experts in the various fields.

In announcing the Conference Secretary Ickes said:

"A demand for a thorough reconsideration of zoning problems has existed for some time.

"In the urban field most zoning ordinances are from ten to fifteen years old, and a great number of communities are contemplating revision in the light of recent knowledge and experience. A zoning conference can be a great help to these communities and to others that may decide upon revisions in the future through frank discussion of common problems and ways to meet them.

"While rural zoning is a comparatively new field, there are many problems of better land use concerning which it will be valuable to define objectives and policies.

"Another subject which will come in for serious discussion is the desirability of zoning of flood plains for the prevention of unwarranted investments some of which might lead to further demands for flood protection at public expense.

"In short, the Conference will endeavor to give impetus to a sustained national interest in the full development of communities along proved and practical lines."

After a two-day discussion of the general subject, a final discussion will summarize the findings of the Conference on rural, urban, flood, plain and recreational zoning and will present "a positive program for zoning."

Buildings Untaxed in Many Australian Municipalities

IN the Australian periodical, *Progress,* published in Melbourne, J. M. Atkinson makes a strong plea for further extension of land-value taxation as a source of national and local revenues. Designating such public revenues as the People's Land Rent Fund, the author says, in the issue of October 1, 1937:

"In collecting the People's Land Rent Fund for revenue, there would be no interference with land titles, as there is not any now where the system partly prevails. Throughout all Queensland; all New South Wales, including Sydney; 14 Victorian Municipalities; parts of South Australia; and West Australia; also a great part of New Zealand, including Wellington, have adopted municipally this reformed system of raising their revenue. All improvements on the land are therefore free from rates [taxes], so building can go on unrestricted.

"In every case the system was adopted without friction, except from land speculators, and so just and beneficial is it in practice that all attempts to revert to the old system of rating improvements have been overwhelmingly defeated by the votes of the ratepayers.

"The activity resulting from ceasing to tax industry, as now, and the bringing of inadequately used land into use, to meet the Land Rent demand, would make industry hum; solve our unemployment problem; and do away with the need for doles, and such charity legislation, which now absorb millions of pounds of revenue.

"It would enormously decrease governmental expenditures now lavished in collecting our existing manifold kinds of taxation. Only one general assessment would be required, and present municipal bodies could collect the whole sum requisite for division between Federal, state, and municipal authorities."

Modern Diesel Operation at Carthage

By CLARENCE HOEN
General Superintendent, Carthage Water and Electric Plant

TEN years ago the city of Carthage, Mo., discarded its existing diesel electric plant, situated on an inadequate site, and built a new plant in which was installed a new 1,250-hp Nordberg diesel engine. Then the other two diesels, of the same make—a 1,250-hp purchased in 1923 and a 750-hp of 1920—were moved into the new building.

For five years these three diesels served the needs of this city of approximately 10,000 population. Meanwhile load increased, until in 1936 a fourth Nordberg engine was installed. This is a 2,250-hp mechanical-injection diesel engine, direct-connected to a flywheel-type Allis-Chalmers generator. This unit produces about 13½ kwh per gallon of fuel oil, compared with the following performance of the other three diesels—9.78 in 1935, 10.33 in 1936, and 10.98 in 1937. Steadily increasing load necessitated the purchase of a duplicate engine in March, 1937, for delivery early in 1938.

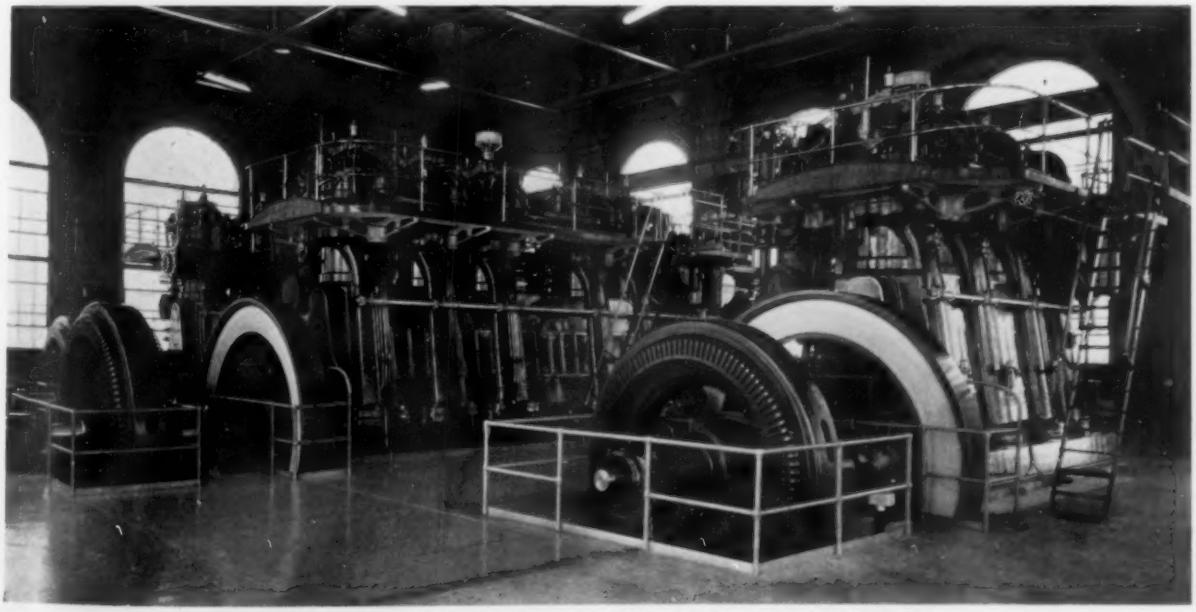
The diesel engines are cooled by the closed-jacket system. Two 500-gallon Goulds motor-driven centrifugal pumps supply this water, while a similar pair furnish the raw water from the city reservoir. Soon, however, a new spray pond will make the cooling system independent of the reservoir. Three separate water lines supply the engines: (1) from the heat exchangers; (2) from the city's distribution system; (3) a hot-water line between high-head pumps and heat exchangers. The operator controls the engine water supply by valves on the operating floor. When the engines are not running, hot water circulating over them keeps lubricating and fuel oil at a uniform temperature and permits easy starting. Hot-water heat for the plant is provided by a heating coil in the muffler of the new engine, with additional heat from a jacket enclosing the muffler of one of the 1,250-hp units.

ATTRACTIVELY PLACED ELECTRIC PLANT AT CARTHAGE

Oil Supply

On receipt of fuel oil, it is stored in two 10,000-barrel tanks and then, after centrifuging, in two 5,000-gallon tanks, from which it flows to the basement of the plant for delivery by fuel-transfer pumps to the overhead tanks which supply the engines. At an average price of 3.25 cents per gallon, the fuel-oil cost in 1937 was 0.264-cent per kwh.

Lubricating oil drained from the crank-cases enters the settling tank, passes through the filters to a 500-gallon sump-tank. Electric pumps lift the oil to 1,000-gallon



THE OLDER DIESEL-ENGINE UNITS OF 750-, 1,250-, and 1,250-HP, AT CARTHAGE
The new 2,250-hp unit, to be duplicated, is shown at the foot of the next page

COLE OVALOID TANK OF 500,000-GALLON CAPACITY AT CARTHAGE, MO.

95 feet high and maintains pressure at 71-83 pounds. Water is pumped into it by high-head service pumps working at maximum rated capacity, with considerable saving over the direct-pressure system formerly used. The electric plant benefits by operating at off-peak the deep-well and service pumps, and the softening plant, which, using the excess-lime treatment, has reduced hardness of water from 12 grains to 4½ grains per gallon

tanks, from which it flows by gravity into the engines. The oil is kept in good condition at all times and remains in the system until used up. At 13.07 cents per gallon, the lubricating oil cost in 1937 was 0.0047-cent per kwh, while the cylinder-oil cost at 42.38 cents per gallon was 0.0059-cent per kwh. Thus the total cost of fuel, cylinder and lubricating oils was 0.2746-cent per kwh.

Switchboard

The Westinghouse 14-panel steel switchboard is located on the operating floor, with the busses and controls in the basement. For convenience in maintaining and repairing oil circuit breakers and metering equipment, an auxiliary bus was installed. By means of a transfer circuit, any breaker can be cut out without interrupting service on the feeder. The outgoing feeders are installed underground in fiber conduit, thus eliminating a maze of wires which would detract materially from the appearance of the property.

For the last two years, ending June 30, operating revenues and expenses of the electric department have been as follows:

	1936	1937
Revenue (net)	$144,762	$167,984
Expenses (operating)	76,368	80,278
Gross surplus	68,394	87,706
All other expenses (interest, depreciation, etc.)	37,026	41,262
Estimated tax on comparable private electric utility	8,015	8,068
Absolute net surplus	23,353	38,376
Value of free service to city at cost	10,325	9,266

The net depreciated value of the electric plant property was $645,447.59 as of June 30, 1937. This figure represents the net value of the property to the citizens of Carthage, as the plant has no outstanding obligations, having instituted a "Pay as you go" policy many years ago.

Electric Rates

Domestic rates for lighting are 6 cents per kwh for the first 40 kwh; 5 cents for the next 60; 3 cents for all over 100 kwh. An optional rate for both domestic and commercial consumers offers the first 100 at 4 cents and all over at 3 cents, with a minimum of $4. To encourage the use of electric ranges, a special rate is offered for range service with a charge of only 1 cent for all over 300 kwh used monthly. Rates to power consumers are equally attractive, ranging from 1.6 cents down to 0.55-cent per kwh, plus a small demand charge.

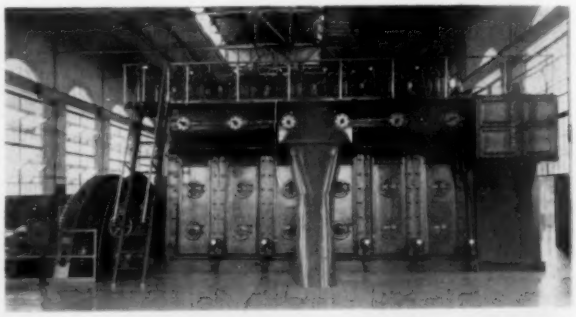
New Engine to Be Installed in 1938

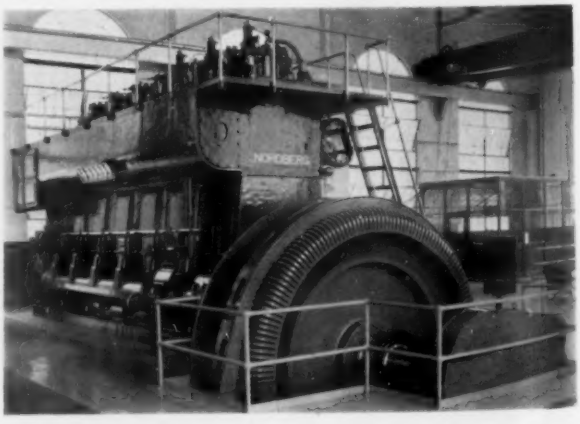
Chief among improvements scheduled for the near future is the addition of another 2,250-hp mechanical injection engine, duplicate of the unit installed in 1936. This diesel was purchased in the spring of 1937, and will be placed in service early in 1938. The new engine will replace the 750-hp diesel which has been in service since 1920 and is now too small to be of any practical value. Installation of the new unit will give the plant a total of 7,000-hp.

In connection with the installation of the new engine, plans have been completed for a modern spray pond, which will soon be built at a cost of approximately $20,000.

Air-Conditioned Office and Shop Building

Several months ago, a two-story stone building located on the public square of the city was purchased to house the offices and meter-testing and repair shops. Bids are now being received on remodeling this building. The remodeling will include the installation of a central heating and air-conditioning plant of the latest design, and a complete renovation of the interior of the building. It is anticipated that about $20,000 will be spent to provide attractive and up-to-date offices which will be in keeping with the rest of the plant property.





ABOVE AND BELOW—THIS 2,250-HP MECHANICAL INJECTION DIESEL ENGINE, INSTALLED IN 1936, WILL BE DUPLICATED EARLY IN 1938

Jackson Citizens Believe in Signs

Mississippi's Capital Continues Effective Program of Signs on City Trucks Carrying Cost Data and Other Information

THE use of informative signs on city motor equipment in Jackson, Miss., began in October, 1935, when the city staged a huge "Know Your City Government" street parade as the opening feature of the municipally operated State Fair. At that time all city employees and all municipal motor equipment were entered in the parade, and the vehicles carried signs giving information about each department.

So many favorable comments were received from citizens who congratulated the administration and said that they had not only learned many worth-while facts about their city government but were well-pleased with the information, that the use of these signs on city motor equipment has been continued. Three types of signs were used originally—tire covers, 24 x 20-inch detachable signs on doors of trucks, and large 2 x 6-foot signs on garbage trucks. The tire covers have been discontinued because of the difficulty and cost of making revisions when necessary.

Signs on Collection Trucks

The 2 x 6-foot signs on the refuse-collection trucks were made of 1-inch pine boards bolted to the side of the truck and painted with the appropriate information. Since each collection truck serves only one section of the city and seldom enters another section, it was found that the different messages were not being conveyed to the entire city. The heavy pine-board signs were discarded, and now a 2 x 6-foot section of Masonite Prestwood is mounted on the old pine-board sign and shifted to other trucks at intervals of about two months. In this manner a message is eventually carried into every section of the city, to be read by every citizen.

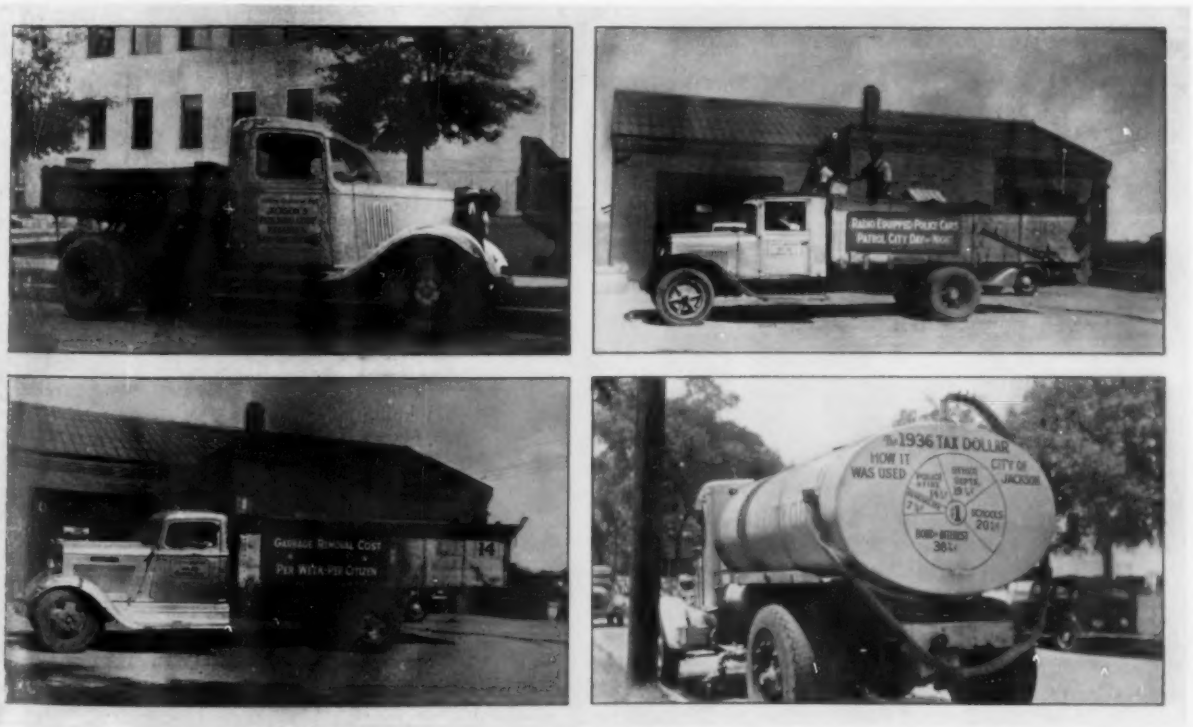
Sheet Metal Signs with Cardboard Fillers

Motor trucks used by the Engineering, Street, Water and other departments had bodies not adapted to the larger sign, so that a different type had to be made. A sheet metal sign has been constructed, measuring 24 x 20 inches, with the sides and bottom curved back about ½-inch to form a slot, making it possible to insert temporary printed cardboard signs. These signs are affixed to the truck doors with six metal screws and can be removed within a few minutes and transferred to any other trucks.

A distinct careful effort was made to have all the signs convey interesting and valuable information regarding some phase of municipal activity. The signs are of course kept up to date and entirely truthful.

The Tax Dallar on Flushers

The city operates two large motor-driven street flushers, and the circular rear end of these flushers proved ideally



MOTOR TRUCKS OF THE CITY OF JACKSON, MISS., CARRYING PERTINENT MESSAGES TO THE TAXPAYERS

adapted to the display of the city tax dollar, as illustrated.

Since the use of these signs began, Jackson citizens have learned many desirable things about their city government; in fact, information that they would probably never have secured in any other manner. Citizens and visitors alike have frequently commented on the value of the signs in conveying information about municipal affairs and in creating a sense of civic pride in the efficiency of the city government and its various departments.

The Wording of Signs

The trucks of the different departments have carried different signs. The Street Department trucks have carried these 24 x 20-inch removable metal signs:

★

KEEPING JACKSON STREETS GOOD THE YEAR 'ROUND

★

MAINTAINING CITY STREETS AT LOW COST

★

BUILDING SAFE BRIDGES AND STREETS

Health Department trucks have informed taxpayers that:

★

PER CITIZEN, COST HEALTH DEPT., 1 CENT PER MONTH

Park Department trucks report to the passerby:

★

MAKING OUR CITY BEAUTIFUL—10 PARKS—152 ACRES LANDSCAPED

The Engineering Department trucks have reported on a variety of subjects as follows:

★

IMPROVING CITY DRAINAGE FOR FLOOD CONTROL

★

BUILDING STREETS—SEWERS—SIDEWALKS

★

JACKSON ZOO ENTERTAINS 150,000 VISITORS ANNUALLY

★

MAKING SURVEYS AND PLANS TO HELP JACKSON GROW

★

JACKSON'S BUILDING CODE REQUIRES SAFE CONSTRUCTION

The street-cleaning trucks, in addition to the signs on the flushers, have carried these:

★

ALL PAVED STREETS WASHED CLEAN 1 TO 7 TIMES WEEKLY

★

HELP US KEEP CITY STREETS CLEAN

★

CREMATORY BURNS ALL GARBAGE TO PROTECT JACKSON'S HEALTH

★

KEEPING JACKSON STREETS CLEAN AT LOW COST

★

JACKSON POLICE ARE TRAINED IN "G-MEN" METHODS

The above signs are all the 24 x 20-inch signs on the doors of trucks and are made of metal into which temporary cardboard signs may be inserted. The following group have been used on the garbage trucks and are of the removable 2 x 6-foot Masonite type:

★

CITY WATER WORKS PROVIDES FREE WATER TO CITY DEPTS. WITHOUT COST TO TAXPAYERS

★

RADIO-EQUIPPED POLICE CARS PATROL ENTIRE CITY DAY AND NIGHT

★

JACKSON'S CITY TAXES ARE BELOW AVERAGE OF OTHER U. S. CITIES

★

KEEPING JACKSON CLEAN—SANITARY—HEALTHFUL

★

AVERAGE PER CITIZEN COST OF JACKSON CITY GOVERNMENT ONLY 5 CENTS DAILY

★

GARBAGE AND TRASH REMOVED FROM 12,000 HOMES 3 TIMES EACH WEEK

★

CITY CREMATORY DISPOSES OF OVER 37,000 LOADS GARBAGE ANNUALLY

★

GARBAGE REMOVAL COST 1½ CENTS PER WEEK PER CITIZEN

★

NUMBER OF CITY EMPLOYEES 28 PER CENT BELOW AVERAGE OF OTHER CITIES

★

FIRE DEPT. EFFICIENCY REDUCED INSURANCE RATES 25 PER CENT

Zoning and the Trailer

ONE method of regulating trailers which has promise of being effective is through zoning. Where private trailer camps are operated as a business, they will probably be automatically excluded from all residence districts by the zoning ordinance. Whether they shall also be excluded from business districts will depend on the judgment of the council. It would be a matter of right for them to be allowed in unrestricted districts. But if they should become a nuisance in unrestricted districts, they can still be regulated with the aid of the zoning law. A time limit could be fixed within which each trailer should become a dwelling, complying with front, side and rear yard requirements, or else move on. It seems logical that any dwelling which shows signs of being permanent should be subjected to the same laws as any other dwelling, whether it has wheels or not. Under such conditions it would not be possible for the trailer owners to stay very long in one city.

This same method of regulation would hit those trailers parked at random on private land, enjoying the advantages of a village or city without assuming any of its responsibilities. If the stay of these occupied sporadic trailers were limited to thirty days, after which time the owner must obtain the equivalent of a building permit showing required front, side and rear yards, not many would linger. If, further, the owner had to make sanitary connections and comply with the provisions of the building code and the fire laws, he would certainly move on.

This type of regulation is suggested as easier to carry out than the punitive type. Trailers could simply be regulated as the small homes in the community, and the courts would certainly see the justice of enforcing the law on a movable home after it has remained stationary for a specified length of time. On the other hand, magistrates would feel hesitant in ousting a well-behaved trailer family just because it is taking undue advantage of the local hospitality.

—By Edward M. Bassett, in *Planning and Civic Comment*.

Municipal Asphalt Plant for Street Repairs Only

New Orleans Has 21-Year-Old Plant Rebuilt to Produce Needed Mixes

USING the cleanest of fuels, natural gas, and with an effective dust collector enclosed in concrete, the municipal repair plant at Jefferson Davis Avenue and Perdido Street, New Orleans, La., offers an example in municipal housekeeping to cities having asphalt plants a decade or more years old. A few years ago, to insure against fire, the old wooden structure housing the plant and the wooden floors were completely replaced with corrugated metal roof and walls and cinder concrete floors.

Three Sands Used

Experimentation with the sands available in the New Orleans district has shown that the densest sheet asphalt mixes can be secured by using about 50 per cent mason's sand, 25 per cent white lake sand from Lake Pontchartrain, and 25 per cent fine Mississippi River sand. These sands are brought to the plant by barge and truck as well as by rail, and unloaded to the concrete-floored stockpiles.

A concrete trough running between the three piles of sand contains a chain drag scraper which carries the sands forward to the pit of the bucket elevator to the drier. The Warren Bros. Pacific type drier measures 6 feet diameter by 26 feet long and uses natural gas as a fuel to raise the temperature of the sand to 550 degrees F. Two men shovel the mason's sand, and one each is used on the lake and river sands. A separate bucket elevator handles the filler, which is ground oyster shells from old shell banks at Morgan City, La. Another bin holds the gravel for the Topeka and other coarse mixes.

The asphalt is brought in by tank cars and pumped to the 60,000-gallon storage tanks by a Warren Bros. steam-jacketed rotary asphalt pump. The same pump is used to raise the asphalt to the 1,500-gallon heating tank, where the temperature of the asphalt is increased to 360 degrees by high-pressure steam in coils.

The hot bin for the aggregates has two compartments totaling 12 cubic yards capacity. From the hot bin the materials are drawn to the batch boxes and weighed by Howe beam scales. The asphalt is drawn by gravity from the heating tank to the asphalt weigh bucket and recorded on dial scales. When the proper weights are measured, the aggregates are dropped into the Warren Bros. pug-mill, immediately followed by the asphalt. Hand-operated toggle-gates are opened to drop the completely mixed batches into the steel body trucks which carry the hot mix to the jobs scattered over the city.

STANDARD MIXES USED

Mix	Asphalt Content	Filler	Sand	Gravel
Sheet asphalt	130	180	1190	None
Topeka mix	90	130	580	700
Black base	90	None	510	900

Street Repairing

Where the condition of the base is so bad that it will not serve satisfactorily for another surface, it is cut out entirely and replaced with a new concrete base. When the asphalt surface alone shows signs of weakness, it is removed down to the concrete foundation. In cases where the asphalt

THE NEW ORLEANS MUNICIPAL REPAIR PLANT

STREET REPAIR IN NEW ORLEANS, SHOWING A SURFACE HEATER AT WORK, AND SPREADING THE HOT-MIX FROM THE MUNICIPAL REPAIR PLANT

is merely worn thin, it is surface-heated with a Super Equitable heater to give a bond for the new material to be added.

In all cases where repairs are to be made, the adjacent asphalt is cut vertical to provide a good joint with the new material, and the edges are painted with the same asphalt that is used in the mix. Similarly, the old or new base of concrete is sprinkled with the asphalt before the new material is placed.

The repair crew consists of two heater men, two rakers and two iron men, with an average of nine laborers for cutting out the asphalt and base and shoveling and wheeling the hot mix. When a load of the asphalt arrives at the site of the patching, the material is dumped in a pile and then shoveled into wheelbarrows, which are taken to the site of the patch. The material is dumped onto the cut and then shoveled and raked to give the best possible uniformity of texture.

Because the temperatures in New Orleans remain high throughout the day and the black mixes also retain their high temperatures for long periods, rolling is frequently delayed until late in the day or even until dusk. Tandem rollers weighing 7½ tons are used for longitudinal, transverse and diagonal rolling on all work. Practically all the rollers are steam-operated Buffalo-Springfield machines. The surface of the repairs is swept with cement.

The asphalt used in New Orleans is all 35 to 40 penetration. The fire wagon used for heating the irons is maintained at high temperature with a pair of kerosene pressure burners.

The municipal repair plant at New Orleans is operated under the direction of Commissioner Joseph P. Skelly, Department of Public Property, by M. V. Haulard, Superintendent.

"Yes! and Right in Milwaukee"

A MOST effective campaign of housing publicity was carried on in Milwaukee as an introduction to a successful conference held at the Plankinton Hotel on October 16, 1937. *The Milwaukee Leader*, a prominent local newspaper, carried a front-page story each day for a week, consisting of a large photograph of some slum section with a bold caption, and a paragraph describing the location, condition, and ill effects of the housing pictured, and advertising the conference. The captions ran: "Milwaukee is Free of Slums—Oh, Yeah?"; "More Proof Milwaukee is Not Free of Slums"; "Unfit for Human Beings"; "Fire and Disease Lie in Wait Here"; "This is the Best Some Tenants Can Afford"; "Another Example of Slums"; and "Yes! . . . and Right in Milwaukee." The last inscription headed a strip of three photographs appearing at the top of the front page of the issue published on the eve of the conference. There was a picture of a windowless bedroom, a squalid kitchen, insanitary outdoor toilets; all in use in Milwaukee today. This final issue in the series also published the program of the meeting, together with a list of 80 labor and civic organizations that were sponsoring the conference.

On the Monday following the conference a fine write-up of its accomplishments was published on the front page of *The Leader*. The Milwaukee Housing Council was established with the sponsorship of 250 delegates from over 100 labor, civic, church and business groups. Nothing was overlooked in starting the Council off with a bang; officers were elected, directors were named, a constitution was adopted, a 10-point program of action and education was approved, and a drive was launched for additional members. The educational program proposed to establish a speakers' bureau and a speakers' training class; print leaflets on housing; develop exhibits to be shown at meetings; arrange tours through Parklawn, Greendale (Milwaukee's PWA and Suburban Resettlement projects) and other housing projects; schedule radio addresses on housing; call conferences on phases of housing, such as the relation of crimes to inadequate housing; build up a library on housing subjects; bring nationally known housing leaders to Milwaukee to speak; and centralize all data on housing gathered by city departments.

It is expected that funds to finance the work will come from contributions by affiliated organizations and fees paid by individuals desiring to join the Council.

The speakers of the conference included Mayor Daniel W. Hoan of Milwaukee, who stressed the need of government assistance in the provision of decent low-rent housing; E. H. Foley, Jr., General Counsel, PWA, who outlined the new National Housing Act 1937; Edmond Hoben, Assistant Director, National Association of Housing Officials, who described housing experience in cities other than Milwaukee, and many others. The "Proceedings of the Milwaukee Public Housing Conference" are obtainable in published form from the Milwaukee Housing Council, Mariner Tower, Milwaukee, Wis., for 25 cents.

Motor-Truck Collection of Refuse in Tacoma

Data on Eight Years of Fleet Operation

EARLY in 1929 the city of Tacoma, Wash., decided to study the question of motor-truck collection for garbage and rubbish, since that branch of municipal housekeeping had not been satisfactorily solved. Disposal was haphazard, garbage and refuse being dumped in residential lots or even along public thoroughfares. This condition received primary consideration in a survey which paid particular attention to (1) house treatment, (2) collection, (3) transportation or haul, (4) disposal.

House Treatment and Collection

Under the heading of house treatment, the survey considered the size of the receptacle. It was recommended that refuse cans be limited to 30 gallons, with smaller cans of 25-gallon capacity preferred. These sizes were determined as being best fitted for practical handling. The location of the receptacle was also studied. A minimum rate based upon curb service was decided upon, with a graduated increase of rate for additional yards of carry.

In estimating the frequency of collection, a careful study was made of the quantity of refuse produced in Tacoma. Owing to the absence of statistics, it was decided that the only practical solution of this problem was to approach it on the basis of experience of other cities. As the quantity per capita depends upon the size of the municipality, the character and habits of the population, the climate and other special features, an average figure was used. It was estimated that Tacoma refuse, which includes garbage, ashes and rubbish, would run about 750 pounds to the cubic yard.

Using the average of figures in other municipalities, it was estimated that Tacoma would produce about 437 tons, or 1,165 yards, of refuse per 1,000 population per year. Because of its relatively mild climate and a corresponding decrease in the volume of ashes, this figure was relatively high. It included collections in the residential districts and also the business sections. A collection once a week in the residential sections and six times weekly in the business sections was decided upon as a practical start.

Hauls and Disposal

In determining the length of haul, the sanitary fill system used in Tacoma's garbage disposal received important consideration. This is a typical Pacific Northwest treatment and seems to fit in closely with the hilly topography. The collection of ashes, garbage and refuse together helps to make this method practical; and as the fill is raised to the required level, a top layer of dirt or gravel completes the job, giving it a sanitary seal. The original survey carefully studied the length of hauls from the collection districts to the fills and arrived at an average figure of 40 miles per day per truck. This figure served as a practical basis for estimating operating costs as well as the number of trucks required.

THE TWELVE NEW REFUSE-COLLECTION TRUCKS PLACED IN SERVICE IN TACOMA, WASH., THIS YEAR

Cost Analysis

With variable items such as length of hauls and number of collections per route well averaged, it was a fairly easy task to compute well-known quantities such as costs of tires, gasoline, oil, garage, insurance, maintenance and repairs and payroll expense. The complete analysis gave detailed figures on each factor of operation and set up a practical cost guide.

Carefully kept records of Tacoma's Department of Public Welfare throw some interesting highlights on the cost of operating its garbage collection fleet, and also show how a complete survey of operating costs made in advance of purchase of a fleet can assist in keeping costs at a minimum. During eight years of operating the original fleet of 14 GMC Model T-80 trucks, from June 1, 1929, to May 20, 1937, the costs of all repairs, maintenance and painting on the garbage fleet amounted to $33,891.30. Gas, oil and grease for all units came to a total of $39,143.34. The total expenditures, not including driver's time and supervision, amounted to a grand total of $73,034.64.

During this period of eight years, there was a total of 10,732,941 pick-ups, or 80,615 loads. The motor-truck fleet worked 206,931 hours and covered 840,490 miles. The approximate yardage collected was 725,535. The average pick-up per hour was 53.1, the average number of pick-ups per load was 134.8, and the average number of miles traveled per load was 9.4.

After carefully studying the cost figures for this fleet, the Department of Public Welfare decided that the greater speed and efficiency of the trucks made today would permit the handling of this service with fewer units. In May, 1937, twelve GMC 1937 Model 23 motor trucks were purchased to replace the fourteen in use previously. Careful cost records have already been started on these units, so that any Tacoma taxpayer can immediately obtain figures that tell him just how much money the city is spending to take care of its garbage and rubbish collections.

Butler, N. J., Builds New Dam for Municipal Water Works

Will Impound 850,000,000 Gallons within City-Owned Watershed

THE Kikeout Reservoir dam for the Butler, N. J., water works is nearing completion. It is located southwest of the borough, just over the Morris County line, on a small stream flowing down Kikeout Mountain from Stickles Pond. With its gates closed, the water is backing-up in a rough cloverleaf which will eventually cover approximately 170 acres of the 200 contained within the borough's reservation.

The Construction

Bedded in solid rock, the 425-foot concrete core wall is 4 feet thick at its base, tapering to 2 feet at the top, and in places reaching a height of 30 feet. The wall is not in evidence, because the earthen embankments, sloping 90 feet upstream and 60 feet downstream, rise 2 feet higher than the concrete, and are flattened to provide a 10-foot roadway across the dam.

On the upstream face the embankment is riprapped to prevent erosion, while the downstream slope has been rolled and seeded. As each 30-foot section of the core wall was poured, it was backed with earth as soon as the concrete had hardened. This method of construction permitted the concrete mixer to travel along the crest as the work progressed, making a long haul unnecessary.

An estimated daily supply of 5,000,000 gallons will be drawn from the reservoir for Butler and the neighboring towns to which it sells water. A reinforced concrete culvert, 191 feet long and 6 x 8 feet inside, leads on a 1 per cent grade from above the dam to an open concrete apron below, over which water will flow to the pond which will be used as an intake reservoir.

A brick gatehouse, 9 feet high, 15 feet long and 12 feet wide, has been erected over the culvert intake at the south side of the reservoir. A three-level series of hydraulically operated gates will control the flow from the reservoir. The high or spillway gate will be used normally, and the intermediate gates will be brought into action when the reservoir begins to drop. In hot weather it is expected that the lower gates will be used to obtain cooler water.

Supplementary Work

After completing the dam and other works on the new reservoir, WPA workers will build a gatehouse on the intake reservoir dam which will admit water to a 16-inch main leading to the borough. The chlorinating plant, at present located at Fayson Lake, south of Butler, will be moved to the new intake, and the main also will be extended. Other work being done at the reservoir includes the construction of two roads on causeways across low ground at the upper end of the reservation, and a clay dike at the east end to prevent overflow of impounded water into the Pompton watershed. This is the only point at which natural barriers do not prevent loss of water. Riprap will cover the water side of the dike, and seeding will protect the outer face.

The future shoreline of the reservoir has been grubbed, stumps dynamited, and the thick growth of weeds and grass covering the area to be inundated has been mowed.

George Weckbach is Superintendent of Water Works at Butler.

Give It the Works on the 2nd Alarm

By EDWARD F. McLAUGHLIN
Fire Commissioner, Boston

"The gentleman pointing to the nozzle is J. C. Schellin, of the Akron Brass Mfg. Co. I am standing next to him holding the nozzle, and next to me is Ex-Chief Henry A. Fox. Next to him is Supt. Edward E. Williamson of the Maintenance Div. District Chief Philip A. Tague is the last man in the front row. Deputy Chief Thomas H. Downey is behind Mr. Schellin. Deputy Chief John F. McDonough is behind Supt. Williamson, and District Chief Edward G. Chamberlain is behind District Chief Tague."—E. F. M.

THREE years ago a reorganization of the Boston Fire Department resulted in the elimination of four fire stations. As guidance to other municipalities contemplating such consolidation, I may say that I do not favor this program and that its promised benefits have not materialized. In the first place, it has not saved the taxpayer any money. In the second place, it has concentrated 8 pieces of apparatus, 13 officers and 63 men in one firehouse, with consequent difficulties in getting to a fire and in proper supervision of so many men. Coming out of this station, the apparatus must turn either to the left or to the right, in either event giving the resemblance of a parade, and if one of the forward pieces should break down, the following pieces stand the chance of being blocked.

There is, however, another form of concentration of apparatus and men, of fighting strength, in which we do believe and in which Boston has led the way. This is in the matter of our running card. It took us two years to work out the details so that in each of our fifteen districts apparatus converges on the fire from four sides in the following number of companies:

Alarm	Engine Companies	Ladder Companies
1st	3 or 4	1 or 2
2nd	5 or 6	2
3rd	5 or 6	
4th	4 or 5	1

Thus on a second alarm we send as many additional companies as on a third alarm. We get sufficient strength to the fire as quickly as possible.

Until 1936 our apparatus was almost entirely of one make; but in that year we bought trucks of other makes as follows:

Mack combination 1,000-gallon pumping engine and hose wagon with booster pump
Seagrave as above
Ahrens Fox as above
Seagrave 85-foot aerial ladder

These have been our only purchases during the last five years. For 1937 and 1938 we have scheduled the following pieces: 8 district chiefs' cars, 5 chief officers' cars, 5 aerial trucks, 10 1,000-gallon pumpers, 6 hose wagons.

Our other pieces range from 1919, 1922, 1924 to 1930. Heavy equipment consists of the following number of pieces:

	In Service	On Reserve
Pumping engines	52	11
Hose wagons	48	8
Ladder trucks—		
Aerial	23	7
City service	8	4
Water towers	3	1
Rescue wagons	3	1
Foamite wagon		1
Fuel wagons	1	1
Lighting plants	2	
Wrecking unit	1	
	141	34

All ladder trucks and pumping engines are equipped with gas masks and inhalators, and with extinguishers using Foamite and soda acid. Each ladder truck in addition carries one CO_2 extinguisher.

Thirty pumpers and all the hose wagons are equipped with deck guns, both stationary and portable. Hose wagons carry either a 30-gallon chemical tank or a 100-gallon booster tank, and several ladder trucks and pumpers are similarly equipped.

Other equipment includes three fire-boats (one with complete diving outfits); two lighting trucks; 43 chief officers' cars in service, and 9 on reserve; four smoke ejectors.

The diving service has saved much property and is recommended for study by all cities on lake, river or seaboard. Another device of special value is a set of pontoons which carry a hose under the docks when the rising tide will not let "pup" boats through.

Our fire-boats are equipped with two-way radio, as are 18 chiefs' cars, and all alarms are broadcast by radio.

The two General Motors lighting trucks are equipped with two cast-aluminum floodlights for 750- or 1,000-watt lamps and with two 500-watt floodlights. In 1937 we purchased ten Studebakers and one Packard for chiefs' cars. One of our smoke ejectors is on a Ford chassis, the other two on Buick chassis, and these are kept at the three division headquarters.

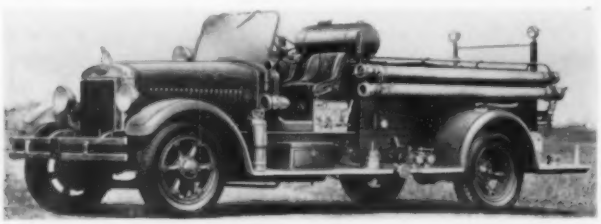
We have a number of Akron water-vapor nozzles and find them exceedingly effective. For thawing purposes we retain three steam fire-engines drawn by Christie tractors, and each pumper is equipped with Ross thawing devices which produce steam in 20 seconds. Three of our towers are raised by water, one by spring.

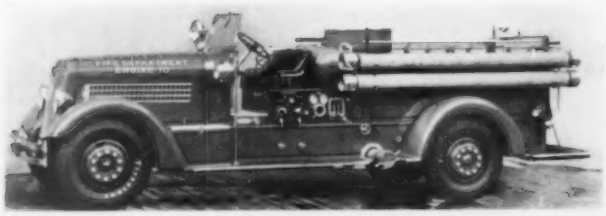
Our Gamewell fire-alarm system is one of the best in the country and we are adding 45 new boxes per year. Consideration has been given to various colors, blue for instance, for fire-boxes, but we hold to the familiar and expected *red*. We also respond to A.D.T. and automatic fire-alarms.

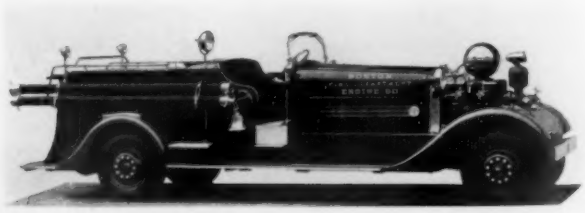
What we need most is men, and last July 96 were added to our depleted force. Our personnel numbers 1,414 men in 53 engine companies, 31 ladder companies, and the other units.

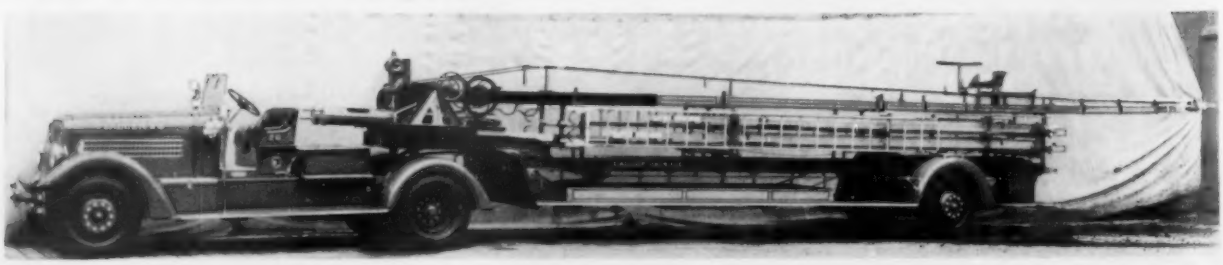
Competent Motor-Vehicle Drivers and Pumper Operators

Fire College opens in November and is attended 3½ hours every week-day by 40 men, who, on completing the course, must take a written examination. The lectures are by leaders in their respective fields, which are administration; electrical hazards; building construction; oil fires; operation of sprinklers; water supply; operations at various types of fires; handling departmental papers; first aid and rescue; arson; fire prevention; motor apparatus; and fire-alarm systems. Of our men, 700 are competent to operate pumping engines, and 1,350 have received special licenses from the State Highway Department certifying them qualified to drive motor fire apparatus. In five years, fire losses have dropped from $5,000,000 to $2,300,000.









BOSTON'S MOST RECENT PURCHASES

Three 1,000-gallon pumping engines: at left a Mack, below it a Seagrave, and beside that an Ahrens-Fox. The aerial is an 85-foot Seagrave

AFTER THE CREST OF THE 1937 FLOOD AT LOUISVILLE

Louisville Plans Riverfront Development

By H. W. ALEXANDER
Secretary, City Planning and Zoning Commission, Louisville, Ky.

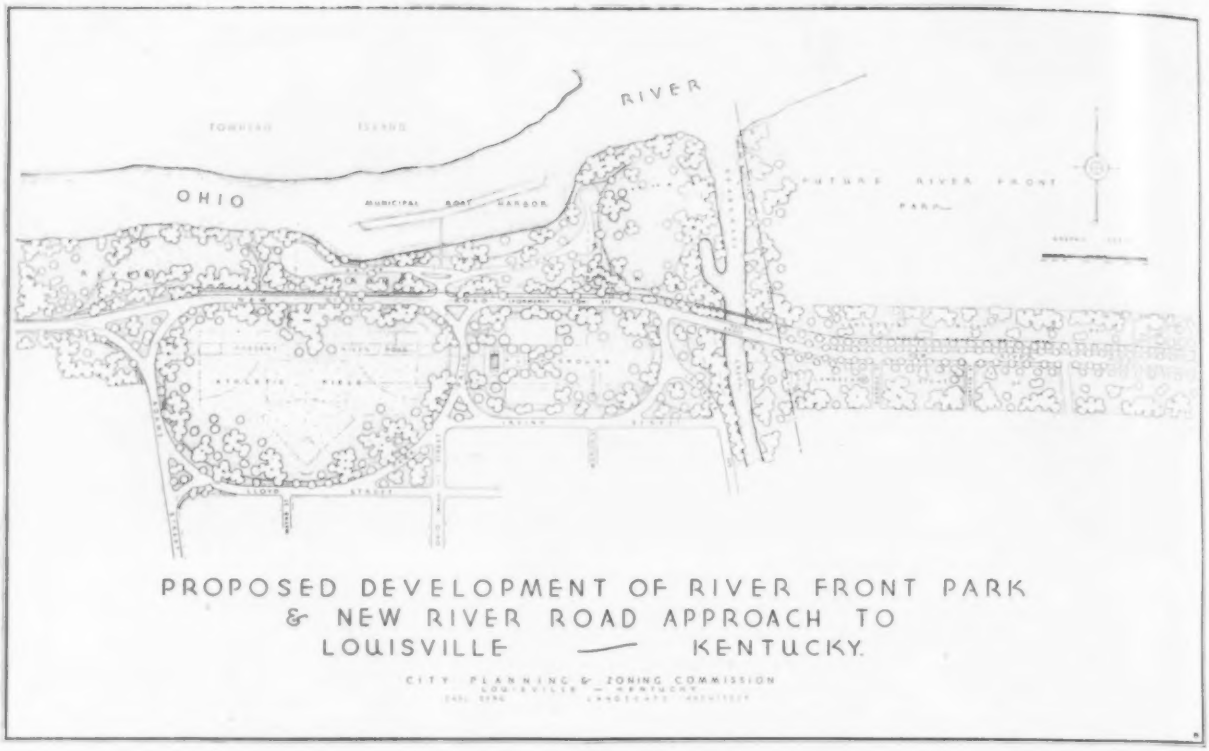
THE Ohio River, which borders the city of Louisville for a distance of more than eleven miles, is both its greatest asset and its outstanding liability. The river is an artery of commerce, the source of public water supply, a convenient place to dispose of sewage, an important recreational facility, and a periodical menace to life and property.

It is thus seen that the relationship between the Ohio and the city is a complicated one, and many serious problems must be solved before the full use and enjoyment of the river can be secured for the people of Louisville. It is readily apparent that the problem is more than local. Flood control, navigation, and pollution present problems which can be met only by comprehensive planning of the entire Ohio Valley; and concerted action by the national, state, and local agencies is imperative to make such a plan effective. Locally, the problem is essentially one of city planning, involving the correlation of rail and water transportation, zoning, street location, and public recreation.

During the steamboat era, the commercial life of the city was centered near the levee, but, with the decline of water-borne traffic, business has receded from the river, and the central riverfront has been abandoned to run-down buildings, railroad yards, and a miscellaneous group of industries such as sand and coal companies. Canalization of the Ohio River, part of which was accomplished by the construction of the dam at the falls of the Ohio at Louisville, has resulted in a series of pools extending the entire length of the river. The pool above the dam at Louisville provides exceptional water recreational facilities, and above the sewers, which empty into the river, it has developed extensively in its use. Below the dam and bordering the city on the west, water recreation is limited because of the pollution occurring above this section of the river. Over a period of years, the city has gradually acquired ownership of a considerable part of the waterfront. Far-sighted action by early Park Boards resulted in the creation of two large waterfront parks and the acquisition of considerable other property now devoted to various uses. Approximately five of the eleven miles of frontage are now owned by the city.

The comprehensive Riverfront Improvement Plan prepared several years ago by the City Planning and Zoning Commission, with the assistance of Harland Bartholomew, provides for the extension of this public ownership over all the waterfront except in certain sections where intensive industrial development has occurred. The plan contemplates the creation of a central plaza opposite the business section, the development of additional waterfront parks, and the construction of a continuous waterfront drive from one end of the city to the other. The latter project includes the building of an elevated highway across the central riverfront which will span the various railroad yards, connect with the proposed plaza, and join the extensive parkway system now existing in the western and eastern sections of the city. In preparing this plan, it was recognized that the flood plain of the river was not the proper location for residences, commercial enterprises, and certain types of industries. It was deemed advisable and in the public interest to eliminate these uses gradually by conversion to park and other public purposes, and this policy has now been in effect for some years. At the time the plan was made, the past history of floods was studied, and it was recognized that recurrence was inevitable. Of course, no one could foresee the disastrous 1937 flood, which surpassed all previously recorded crests by approximately ten feet.

The folly of utilizing the flood plains of the river for



PROPOSED DEVELOPMENT OF RIVER FRONT PARK & NEW RIVER ROAD APPROACH TO LOUISVILLE — KENTUCKY.

CITY PLANNING & ZONING COMMISSION LOUISVILLE — KENTUCKY

residential and other uses was conclusively demonstrated by the damage resulting in January, 1937, and steps were immediately taken by the city to remove these areas from residential use by amendment of the zoning ordinance which would prevent the erection or repair of residential structures. This movement was unsuccessful because it was so closely tied up with the plan for acquiring this property for park purposes. It was claimed by the opponents that the city was attempting to secure land for the park system without compensating the owners, and that it was attempting to take advantage of the distress occasioned by the flood, which destroyed many homes along the river.

Lacking funds to pay for all the property included within the proposed restricted area, a shift of plans became necessary, the original area was considerably reduced, and further consideration of the proposed zoning amendment was abandoned. Needless to say, the flood left the city's finances greatly impaired; there was insufficient time to vote bond issues, and unless something was done immediately, history would repeat itself and new houses would be built to take the place of those destroyed.

Under the leadership of Mayor Neville Miller, limited public funds were made available, and the general public responded in the emergency by pledging approximately $50,000 to be used in the purchase of property in that part of the city known as the "Point," which lies within the area proposed as a waterfront park on the upper river. Within this area there had been 546 residences, of which 308 were totally destroyed, 162 were irreparably damaged, and 75 could be repaired. This particular section lies at the entrance to the city through which traffic from Cincinnati and intervening localities from the east must pass en route to the central part of the city. Over a period of years, it had developed with miscellaneous enterprises such as cheap restaurants, filling stations, beer parlors, and the like.

The proposed plan will eliminate these objectionable uses, make an attractive entrance to the city, and create a much-needed recreational center serving the heavily populated northeast section of the city. The area within which property is now being purchased comprises approximately 50 acres, more than half of which has been acquired as of October 15. It is estimated that the total cost of property acquisition will aggregate $130,000. Plans are being made for development of the area as a Works Progress Administration project.

The project has encountered many difficulties, chief among which was the opposition of a few of the old-time residents of the area to moving out. This opposition resulted in the filing of an injunction suit against the city, which contested the legality of condemning the property for park purposes. The Kentucky Court of Appeals affirmed the decision of the lower court, which upheld the city on all points. Much difficulty was encountered in establishing clear title to some of the property, because there had been considerable squatter development.

It is hoped that the successful consummation of this improvement will be a valuable demonstration of what can be done in cities along rivers where disastrous floods occur, in reducing periodical damage to property which lies within the flood plains along the rivers. Plans are under way in Louisville and other Ohio Valley cities to construct local flood protective works as a safeguard against the repetition of the disasters of 1936 and 1937. All these proposed levees and walls will be built back from the normal river channel a sufficient distance not to restrict unduly the flow of the river during floods. This will leave comparatively large areas of these cities without protection. It is within these areas that the city should acquire all the property possible for conversion into parks and for other public purposes.

Operation, Maintenance and Lubrication of Rotary Sewage Distributors

By J. M. BILISOLY
Chief Field Engineer, The Dorr Co., Inc., Engineers

THE Dorrco distributor is a revolving device for distributing treated sewage over trickling filter beds. The rotation of the distributor is caused solely by the reaction which results from the discharge of sewage through the orifices in the distributor arms. No outside power is required.

The revolving portion of the distributor consists essentially of a vertical column, the foot of which forms a manifold from which extend two to four radial arms. These radial arms are equipped with adjustable flat spreader nozzles along their length for distributing the sewage. The radial arms are supported in the vertical plane by guys which extend from a cap at the top of the rotating center column to split clamps attached along the length of the arms. In the horizontal plane the arms are held by diagonal ties extending from one arm to another and attached to the same split clamps.

The entire rotating part of the distributor is supported by a stationary column which extends up through the center of the outer rotating column. At the top of this stationary column is a bearing which takes both the radial and thrust load of the rotating mechanism with a single set of rollers. At the base of the rotating center column there is installed either a specially designed stuffing-box, or a mercury seal. In addition, provision is made for radial loads by means of four adjustable rollers which operate in contact with a guide ring. These may be seen in the line drawing of the distributor.

The standard stuffing-box furnished with Dorrco distributors uses a Garlock packing called "Chevron," so named because of the shape of its rings. This packing has very little surface in contact and when wet requires practically no pressure to hold it tight. When specified, a mercury seal is furnished instead of this standard type of packing seal.

Feed to the distributor is controlled by a dosing siphon which operates automatically on the fill-and-draw principle. This takes care of the irregularities in the flow of sewage to the plant and provides for dosing the filter bed at a uniform rate.

Lubrication of Distributor

There are only three points to be lubricated on the Dorrco distributor. These are the roller bearings at the top of the center column, the guide rollers at the base of the column, and the packing gland around the manifold.

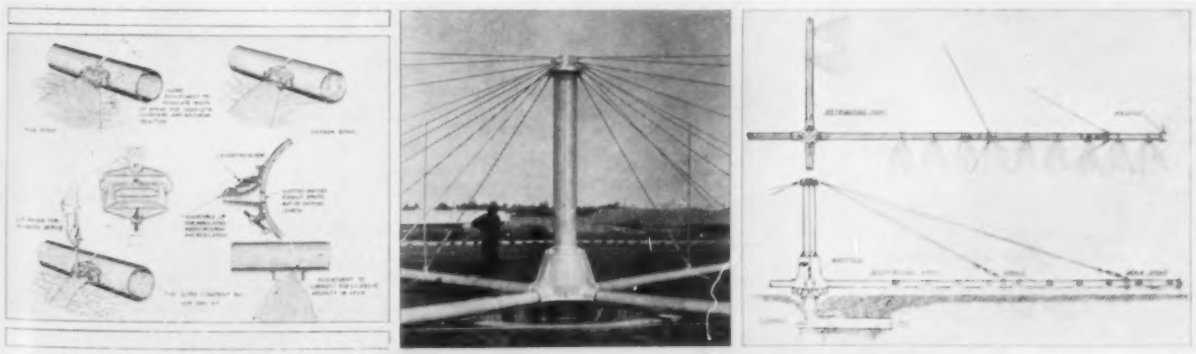
For the roller bearings at the top of the column an SAE 50 oil is recommended for use in summer and an SAE 20 for use in winter. The packing in the base may be lubricated with white petrolatum, vaseline. A light grease should be applied to the guide roller ball bearings by means of the grease fittings provided for that purpose.

Starting the Distributor

Before starting the flow of sewage to the distributor for the first time, check the installation with the erection drawings, noting particularly that the dimensions of the dosing siphon are accurate. It may be necessary to adjust the length of the compression seal nipple by trial to get the siphon to start at the correct high water level. Flush out the dosing tank and piping by opening the drain in the base casting.

Test the siphon and feed piping to be sure that it is absolutely airtight. This may be done by filling the feed pipe with water up to the centerline of the arms, and then allowing sewage to flow into the dosing tank to a point just below the discharge level. Allow this to stand quiet for a time, and if the level does not fall it may be assumed that the system is tight.

Make sure that the distributor arms are level and that they maintain their level throughout the complete revolu-



DETAILS OF DORRCO ROTARY SEWAGE DISTRIBUTORS
Right, sketch of the distributor. Center, close-up showing the center column construction of the distributor at Escanaba, Mich. Left, details of the flat spray nozzles

A 150-FOOT DORRCO DISTRIBUTOR AT ESCANABA, MICH.

tion of the filter bed. Turn the distributor by hand to make sure that it rotates freely. There should be very little friction at the stuffing-box if the Chevron packing has been loosely installed and lubricated as instructed.

After making sure that the distributor is in adjustment and rotates freely, the flow of sewage may be turned in. The mechanism should start up easily and spread the sewage uniformly over the stone bed. The speed of the distributor will depend largely on the head available, and may be several revolutions per dose or less than a full revolution, but this is of no particular importance as long as it moves sufficiently to avoid local overdosing and ponding.

Adjustment of Distributor

The Chevron packing at the manifold may leak a little at the start, but after a few days it will swell and seal itself. Do not tighten the packing gland more than just enough to hold the packing in place. A slight pressure with the thumb-nuts is enough. It may be possible to remove some of the packing and use only one or two Chevron rings to secure a sufficiently watertight joint with a minimum of friction. The packing should be lubricated occasionally with white petrolatum.

The mercury seal, furnished in special cases when specified, is particularly recommended for low heads. No particular attention is required for the mercury seal other than to see that the mercury well is clean and free from grease before filling. The water should be drained occasionally in order to remove dirt and to admit air to the space above the mercury. If the distributor is not run during the night or is left idle for any appreciable time in cold weather, the water should be drained from the center.

The following quantities of mercury are required for the various sizes of standard seals to withstand heads up to 4 feet.

Size Diam. of Outer Column	Cu. In. Mercury	Pounds Mercury
3-4	38	19
4-6	47	23
8-10	68	33
12-14	89	44
16-18	109	54

Owing to temperature changes, it will be necessary to compensate for expansion and contraction of the guy-ropes supporting the distribution arms. In most cases the arms should be adjusted so that they will be horizontal at the maximum temperature of the locality where installed. Where the distributor must operate on a very low head, the arms should be as nearly horizontal as possible, at all times. This may require adjustment between winter and summer weather. During coldest weather the elevation at the end of the arm will be about 4 inches higher than in summer on a 140-foot diameter distributor, and proportionately less on smaller units.

Drain holes are provided so that no sewage will remain in the arms between doses and be likely to freeze in cold weather. In warm climates or summer weather it may be preferable to plug these drain holes with rubber stoppers. If observation shows that the drain holes are passing more sewage than desirable and possibly causing some ponding on the bed, as many of the holes as necessary should be stoppered.

Flat spreader nozzles.—The number and size of openings in the distribution arms have been designed for the specified head and flow, and the nozzles should pass the correct quantity of sewage for uniform distribution. In operation the spray should present a smooth, unbroken line with an increase in volume apparent toward the ends of the arms. If some of the spreaders are not correctly adjusted, this wil be immediately apparent and can be corrected by turning the nozzle castings until the proper opening is obtained.

Maximum turning effect is obtained when most of the sewage leaves the nozzle at right angles to the arm. In order to get proper adjustment and good distribution without overlapping, it may be necessary, particularly with low dosing rates, to adjust the vertical dimension between the lips of the orifice by means of the adjusting screw.

The spreader lip is weighted in order that the original adjustment for width of spray may be maintained. The spreader lip is lifted only when it is necessary to clean the orifice. When the orifice is cleaned, the spreader returns to its original position.

The rate of discharge should be safely in excess of the maximum flow to be handled. If the discharge rate is excessive, or if the sewage does not rise sufficiently in the overflow pipe to fill the compression trap, it will be necessary to adjust the sprays on the arms to reduce the discharge quantity.

If appreciable quantities of grease balls, leaves, or other such materials, are likely to get into the feed to the distributor, a coarse screen or wire mesh with ½-inch openings is necessary ahead of the dosing tank. A convenient arrangement is two screen frames in series, so that one remains effective when the other is removed for cleaning. In a wooded area where leaves are apt to blow into the dosing tank, the tank should be covered either with wire mesh or with planking.

In cold climates, particularly where the flow is small,

it is advisable to cover the dosing tank with planking during the winter months to avoid freezing in the control piping.

The dump-gates at the ends of the arms should be opened to flush out the arms as frequently as necessary, to prevent plugging the nozzles with grease balls or trash. Periodic flushing of the feed pipe by opening the drain-out is also desirable. The frequency of cleaning out the arms and piping will depend on the nature of the sewage and local conditions, so must be determined by experience.

Cleaning Up the Raritan River in New Jersey with Sixteen New Sewage-Treatment Plants

THE Raritan Valley in northeastern New Jersey is in the heart of one of the most densely populated and most diversified industrial areas in the United States. The drainage area of the valley covers 1,100 square miles, it has a total population of 250,000 and an additional industrial equivalent population of 100,000 more. Because of the raw sewage discharged into the river, and industrial wastes from the many factories along the river banks, the Raritan has been changed from a clear stream to something approaching an open sewer. This evolution has taken place in a comparatively short time, at least since 1922, when Rutgers University held the Olympic swimming championships in the river. Such an event was impossible a few years later because of the foul condition of the water. The river became so polluted that in the critical tidal portion of the stream, in the neighborhood of New Brunswick, the stench made life in the countryside practically unbearable.

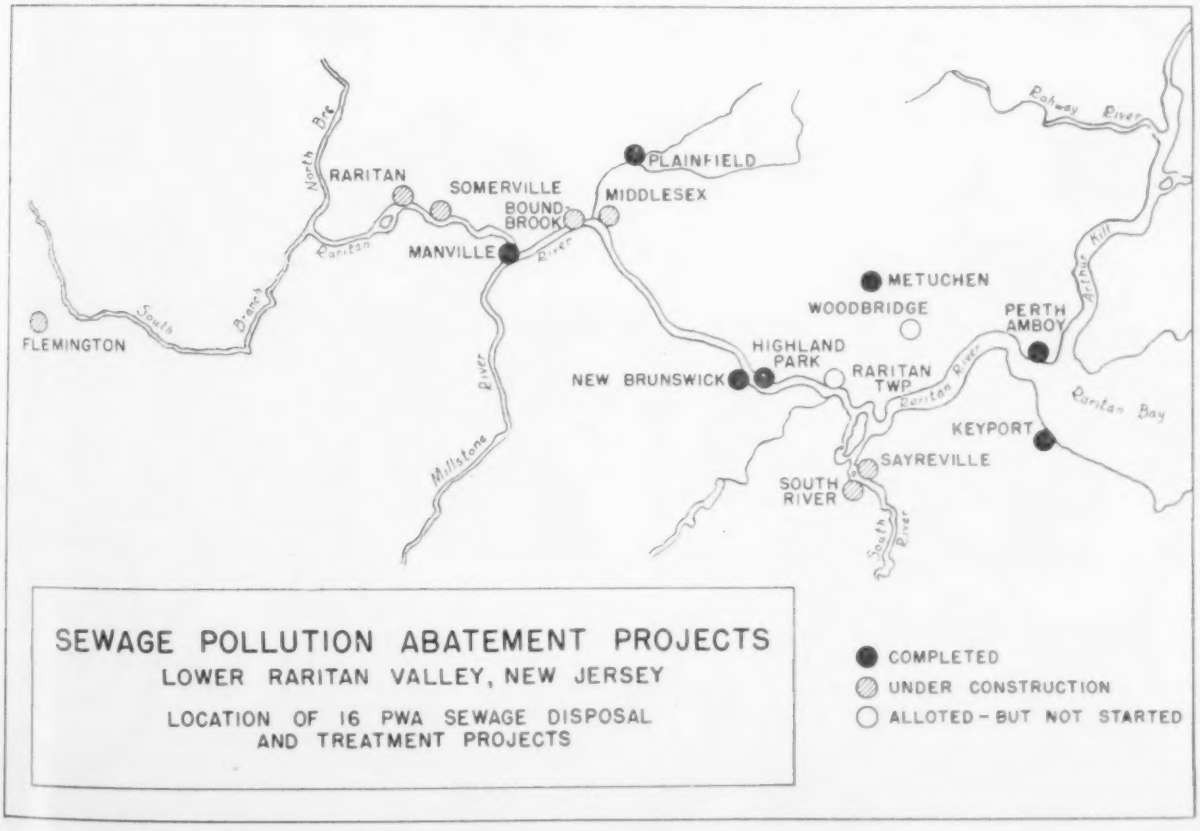
The New Jersey State Department of Health issued orders several years prior to 1933 that the sixteen municipalities in this valley should cease discharging untreated sewage into the river. The order was upheld in the Court of Chancery, but financial difficulties prevented action by these cities and communities until loans and grants were made available by the Public Works Administration.

There was no studied coordination of effort among the six-

TABULATION OF THE RARITAN VALLEY PROJECT

	PWA Allotment			
Location	*Loan*	*Grant*	*Total*	*Total Estimated Cost*
Perth Amboy*	$662,000	$259,000	$921,000	$922,033
Highland Park*	145,000	119,045	264,045	264,545
Metuchen*	58,000	47,454	105,454	105,454
New Brunswick*	—	225,000	225,000	500,000
Keyport*	28,000	31,500	59,500	70,000
Manville*	154,000	138,150	292,150	306,000
Plainfield*	—	28,636	28,636	63,636
Bound Brook	—	108,000	108,000	240,000
South River	—	63,000	63,000	140,000
Sayreville	—	103,090	103,090	228,900
Raritan	—	118,636	118,636	263,636
Flemington	—	29,454	29,454	65,454
Somerville	—	94,909	94,909	210,909
Middlesex	—	247,909	247,909	550,909
Woodbridge	—	81,000	81,000	180,000
Raritan Twp.	—	45,000	45,000	100,000
Total	$1,047,000	$1,739,783	$2,786,783	$4,211,476

* Projects that are completed.



teen communities in planning for the sewage-treatment systems. Perth Amboy and Middlesex were the first two communities which entered successful applications for PWA assistance. The former asked for aid October 18, 1933, and received an allotment shortly thereafter. But the latter, although it entered its application February 10, 1934, was unable to comply with PWA requirements until the latter part of 1936. The remaining 14 communities were quick to follow the example of Perth Amboy and Middlesex. Work on sewage-treatment plants at Perth Amboy, Highland Park, Metuchen, Keyport, Manville, Plainfield and New Brunswick has been completed. Work is under way on the projects of Bound Brook, South River, Sayreville, Raritan, Flemington, Somerville and Middlesex. Money has been allotted, but construction has not yet been started on the projects at Woodbridge and Raritan.

When these sixteen plants are completed and placed in operation, no further untreated human wastes will be discharged into the Raritan. Because of the limitation of the state laws of New Jersey, various of the industrial plants will continue to dump their chemical wastes into the river, but it is believed that this will have little effect upon the natural condition of the river, inasmuch as the chemicals in most cases will not be injurious to fish life and river vegetation. Many of the factories have cooperated with the communities in such fashion that all their wastes are, or will be, treated by one or another of the sixteen sewage-treatment plants. In all other cases the factories have arranged that domestic wastes be treated by the sewage plants, whereas their industrial wastes will continue to be discharged without treatment into the river. These particular wastes are the least troublesome as regards stream pollution.

Another Town Rids Itself of Sewage Nuisances

A SERIOUS failing of many city and town administrations is in allowing the construction of dwellings and other buildings to continue in unsewered areas without any adequate provision for sewage disposal. Later, except where soil conditions happen to be particularly favorable for seepage, or building lots are large, there come the inevitable sewage nuisances, which are a worry to the home owner and to the health authorities. In fact, some problems develop which are difficult of solution without abandoning the properties.

The town of West Hartford, Conn., has recently moved to prevent sewage nuisances in advance of house construction, by enacting the following regulations, which may well serve as a model for other towns and cities:

REGULATIONS CONCERNING SEWAGE-DISPOSAL FACILITIES FOR PREMISES WHEN A PUBLIC SANITARY SEWER IS NOT AVAILABLE

On and after July 1, 1937, no sewage-disposal system shall be installed, altered or repaired within the town of West Hartford without compliance with the following rules and regulations, except that the following rules and regulations, or any part thereof, shall not apply to installations connected with the public sanitary sewer; nor shall the following rules and regulations apply to plumbing installations within buildings or to appurtenances installed under the jurisdiction of the Department of Public Works.

Unless otherwise authorized by this department to meet special conditions, the sewage-disposal system of any residence or other place of habitation located where a public sanitary sewer is not available shall consist of an approved septic tank or tanks followed by an approved sub-surface drainage system. The sub-surface disposal system shall consist of leaching cesspools, tile field, filtration units or combinations of such systems.

1. SEPTIC TANK:

(a) The proposed location of the tank must receive the approval of the director of health.

(b) The minimum permissible capacity of the septic tank to be used shall be specified by said director, this minimum capacity to be based on the probable maximum number of persons contributing to the system.

(c) The design of the tank, either prefabricated or constructed on the premises, must receive the approval of said director.

2. SUB-SURFACE SEEPAGE:

(a) The proposed location of leaching cesspools, drainage trenches or filters and distribution grades must receive the approval of said director.

(b) Said director will make a soil "seepage test" at the location of the proposed drainage field and, on the basis of the results, specify the minimum number of feet of land tile to be used, or the minimum number of square feet of absorption area to be provided, as the case may be.

(c) Tile distribution pipes must be laid in broken stone or screened gravel.

(d) Protection against the sifting of backfill into the distribution medium shall be provided in the form of tarred paper, straw or other material approved by said director.

3. INSPECTION:

(a) No sewage-disposal system installation, alteration or repair shall be covered over until the same has been inspected by said director.

4. CREATION OF NUISANCES:

(a) In the event that the compliance with the minimum requirements set forth in these regulations does not adequately dispose of the sewage on any property at any time after occupancy, it shall be the responsibility of the property owner to extend his system or make any necessary changes to avoid the creation of a nuisance.

(b) Nothing in these regulations shall be construed as granting authority to create or maintain a nuisance.

In West Hartford, the town charter provided that the local health council was empowered to enact such regulations. However, in Connecticut, any town, city or borough, under authority of Section 2657 of the General Statutes, may prohibit or regulate the construction of dwellings, apartments, boarding houses or hotels unless the sewerage facilities are approved by authorized local officials. A few cities and towns in Connecticut have enacted such ordinances, but in most communities no action has yet been taken. A similar situation applies in many other states. Every town, city and borough in any state should act to prevent sewage nuisances by the enactment of local legislation. The various state departments of health are always glad to cooperate to the extent of reviewing local situations with local officials in the interest of public health.

Sewage Relift Station at Little Rock, Arkansas

A NEW sewage relift station has been built in Little Rock, Ark., as an important part of its extensive improvement to the sewerage system. The entire project, including the relift station, rehabilitating old sewers, and laying 27 miles of new concrete and clay sewer pipe, cost $1,640,000. Heretofore, when the Arkansas River reached flood stage, the gravity-flow outlet sewers were unable to discharge into it, presenting a real threat to the health and safety of residents. Construction of a relift sewage-pumping station therefore was necessary, and its location, design and equipment were given proper attention. After studying water-level records covering the last fifty years, the engineers decided upon a site in the southeast section of the city approximately 300 feet from the river. Because of the nature of the ground, due to the dumping of refuse over a period of years, a monolithic concrete box pump pit was built. It is 28 feet square and 27 feet deep from ground level to the bottom of the pit, and rests upon a concrete mat 32 feet 4 inches square and 2 feet 6 inches thick.

The pumping equipment consists of three Fairbanks-Morse horizontal sewage pumps mounted on structural steel subbases with, and direct-connected through, flexible couplings to F-M 60-hp, 400-rpm, 3-phase, 60-cycle, 220-volt, slip-ring motors.

Gravity flow into the river is possible during about ten months of the year, but when the river reaches a 16-foot stage sluice-gates in the gravity-flow line must be closed, and those in the wet well of the pumping station opened. The three new pumping units have a capacity of 6,000 gpm each, against a maximum pumping head of 27 feet, but since the average pumping head will be considerably less than 27 feet, the slip-ring motors are furnished with variable speed controls, so that the speed can be varied between maximum and 50 per cent of the maximum to care for actual pumping demand.

Street Cleaning in Boston

Wide Variety of Methods Employed and Two Cleaning Departments Divide the City and Suburban Streets

By ADOLPH J. POST
Division Engineer, Public Works Department, Boston, Mass.

THE city of Boston is divided for street cleaning purposes into seventeen districts with a variety of population, traffic and pavement conditions, each requiring the application of methods peculiarly suitable to the location. Practically every known method of street cleaning has been tried in Boston at some time or other.

A study of our street cleaning methods reveals, on the one hand, the usual number of cleaning operations, and, on the other, three unusual features: (1) the division of the city between two independent services; (2) the important bearing upon operations of man-power from the Welfare Department; (3) the resulting special form of reporting.

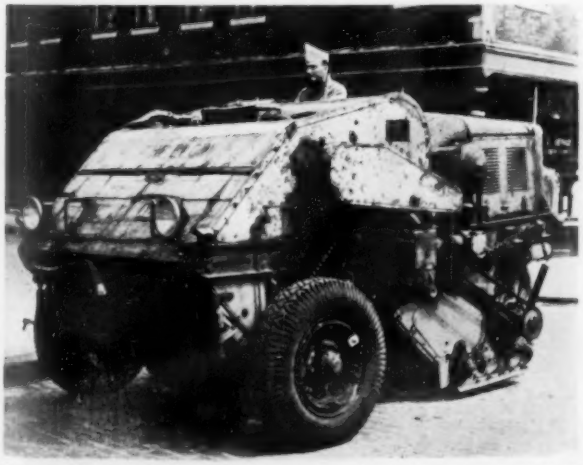
The operations performed are: (1) hand brooming; (2) push-cart patrol; (3) team patrol; (4) motor sweeping; (5) flushing and sprinkling; (6) removal of old automobiles; (7) refuse-box collection.

Hand Brooming

The hand brooming operation is executed in all districts in much the same manner; namely, brooming into piles, followed by trucks or carts into which the piles are shoveled. The work moves along regular established routes.

There are two variations. One of these is that the men shovel material from secondary streets into baskets, which are taken to the corners of the main streets, where they are emptied into trucks which travel only on the main streets.

Another special method is employed in a district which includes a congested residential section and the main market area. Here, because preventive measures are difficult to establish, and because the market refuse consists of large



THE MODERN PICK-UP SWEEPERS WORK ON THE SMOOTH PAVEMENTS

THIS TYPE OF STREET SWEEPER WAS USED IN BOSTON AT LEAST THIRTY YEARS AGO AND IS STILL PROVING EFFECTIVE IN THE MARKET DISTRICT

boxes, crates, wires, etc., horse-drawn sweepers are used, working in battery formation, which push all this material in windrows to the gutter, where it is piled and removed by a force of broom men and shovelers.

The frequency of cleaning in the different districts varies from 1.3 to 6.5 times per week. There are from 1.5 to 5.7 cubic yards of material per mile, and the cubic yardage per man, per day, varies from 0.7 to 1.7.

Push-Cart and Team Patrols

The push-cart patrol is used in most of the districts, and the men cover a fixed route several times a day at shopping centers and the like. Filled barrels are exchanged for empty ones along the route, and the filled barrels are later picked up by a special truck.

In addition to the local patrols just mentioned, there is a large push-cart patrol force covering the downtown area, which is under the direction of a foreman who gives his entire time to this operation.

The cubic yardage per mile varies from 0.6 to 3.0.

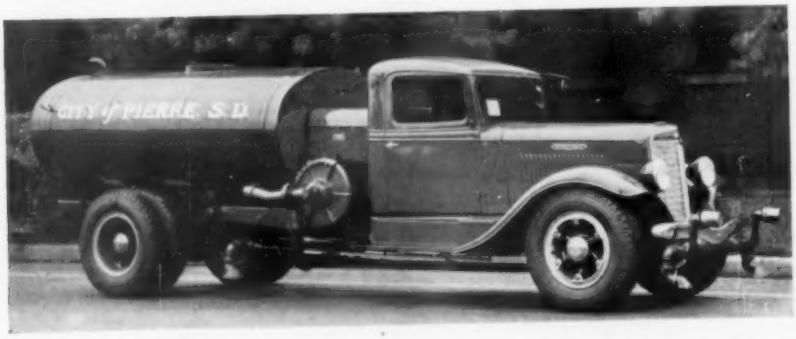
The team patrol is used in a few sections having too much material for a push-cart.

Motor Cleaning

Motor sweeping on smooth pavements is done by means of eight sweepers, which are of the Elgin and Kinney types. These have definite routes which must be followed in sequence. Some of the sweepers dump directly into scows on the waterfront, and others drop their loads in the street, whence the dirt is shoveled into vehicles and taken to more distant dumps. In the downtown area, mo-

SMALLER SIZED Cities Find . . . . Street FLUSHING Most Economical and Sanitary

Decatur, Indiana, population 5156, is the proud owner of this handsome "South Bend" flusher, mounted on Reo truck-chassis. Decatur has solved its street-cleaning problem in a more sanitary manner with this new "South Bend" Flusher.



Pierre, South Dakota, population 3659 has proved that the smaller-sized city can economically have "dustless" streets by the use of this modern "South Bend" flusher mounted on IHC chassis.

Worthington, Minnesota, population 3876, is another typical example of the smaller community adopting street-flushing. This "South Bend" flusher, is also equipped with sprinkler-heads to sprinkle macadam, gravel or natural soil streets.

Perhaps the mistaken impression has prevailed that smaller-sized cities cannot afford the better street-cleaning at lower cost made possible by flushing.

Perish any such thought. Here are three typical examples of cities of 5,000 population and under, each owning a "South Bend" flusher to clean streets more economically than by any other machine method.

Of course, large cities from New York down, in size of population, have always found flushing to be the most satisfactory, economical and s a n i t a r y method of street-cleaning. The same will be true with any city, large or small, which adopts flushing . . . for cleaner streets at lower cost.

Send For Sales Literature Now

Get complete information relative to the famous "South Bend" Street Flushers. Put your street-cleaning problem up to us. Write **Municipal Supply Company, South Bend, Indiana,** now.

●

South Bend
PRESSURE STREET FLUSHERS

During December we hope you will remember to mention THE AMERICAN CITY.

tor sweepers can operate only at night on account of traffic conditions.

The cubic yardage per mile varies from 1.1 to 3.2.

Flushing and sprinkling is done with flushers having 40 pounds per square inch pressure, and they, too, have definite routes, adjusted, when necessary, to meet weather and local conditions.

The Abandoned-Auto Problem

The removal of old automobile bodies is done by a crew which is serviced by a platform truck and a crane truck. This crew removes old automobile bodies from public streets and from private property under a special procedure. The Health Department notifies the owner of the private property that a nuisance must be abated, and states that if the automobile is not removed within ten days the Health Department will instruct the Public Works Department to remove it. After removal by the Department, the property owner is billed at the rate of $5 per vehicle.

Litter Cans

There are 378 catch-all boxes in the city, and 141 of these bear advertising. The advertising concern that owns these boxes pays a fee annually to the city for the privilege. The Street Cleaning Service empties these boxes several times a day, depending on the need.

Two Cleaning Departments

The street cleaning of Boston is done by two independent services, each under the direction of a Division Engineer. The Street Cleaning Service covers a street length of 360 miles, and devotes all its time to this work, while the Paving Service maintenance force cleans 349 miles of streets in certain outlying districts incidentally to its other work.

The organization of these two independent forces and their subdivision into districts are shown below.

ORGANIZATION OF STREET CLEANING SERVICES IN BOSTON, MASS.

Mayor:
- Commissioner of Public Works
  - Division Engineer, Bridge and Ferry
  - Division Engineer, Sewer
  - Division Engineer, Water
  - Division Engineer, Water Income
  - Division Engineer, Highways
    - Lighting Service
    - Contract Construction
    - Paving Maintenance Service
      - Street Cleaning—349 miles; 211 cleaning miles per week*
        Average frequency—0.6 times per week
        - 7 district foremen (part time)
        - 42 city laborers (not including chauffeurs)*
        - 105 welfare men
        - 14 trucks, with chauffeurs
        - 1 motor sweeper, with chauffeurs
  - Division Engineer, Sanitary
    - Waste Collection
      - Street Cleaning Service—360 miles; 853 cleaning miles per week
        Average frequency 2.4 times per week
        - 10 district foremen (full time)
        - 152 city laborers
        - 284 welfare men
        - 28 carts and teamsters
        - 21 trucks and chauffeurs
        - 7 motor sweepers and chauffeurs
        - 6 horse-drawn brooms and teamsters
        - 4 flushers and chauffeurs
        - 1 platform truck and chauffeurs
        - 1 wrecker and chauffeur

* Since this article was prepared, 90 miles of streets has been added to the length to be cleaned by the Street Cleaning Service (work formerly done by the Paving Service), and some 25 men have been transferred to the Sanitary Division, Street Cleaning Service, from the Paving Service.

Welfare Labor

The street cleaning operations of the city of Boston depend for direct man-power, not including chauffeurs and supervision, upon a force of 579 men, which is made up of regular city laborers and welfare men.

Since 1932, no vacancies in the regular force have been filled, and as a result the deficiency is made up by welfare labor. All employables on the welfare lists are required to devote various numbers of days to work, depending upon the amount of aid received. Since the average aid results in two days' labor, it requires three individuals to produce a full week's work. The number of men thus supplied by the Welfare Department varies greatly from day to day, with the result that the total direct force available is always uncertain.

In consequence of the above situation, work schedules have been developed which are progressive rather than fixed. For instance, while it is known what the ideal schedule should be in regard to frequency, the only thing we can prescribe is (1) that certain important operations must be done before others, and (2) that all other work must follow in sequence.

For the control and reporting of the work done, a special form has been devised based upon Public Administration Service fundamentals.

On this form, the Street Cleaning Foreman's Weekly Report, a route number is noted only when the cleaning of that route has been completed; and the next route will not be started until the preceding route is finished. The "cleaning feet" in each route is known (a cleaning foot is 2 curb feet), and any small variations are added or subtracted on the form. The foreman in each district is supplied with an alphabetical register of streets, showing the length of each block, to which he refers only for these minor adjustments. A great deal of computation is thereby saved to the foreman, and his cooperation is thus assured, which is not the case in the method of making long additions each night, which would vary enormously on account of the fluctuating man-power. Of course, the report is always a few days behind, but, because of the cumulative nature of the procedure, it is always correcting itself.

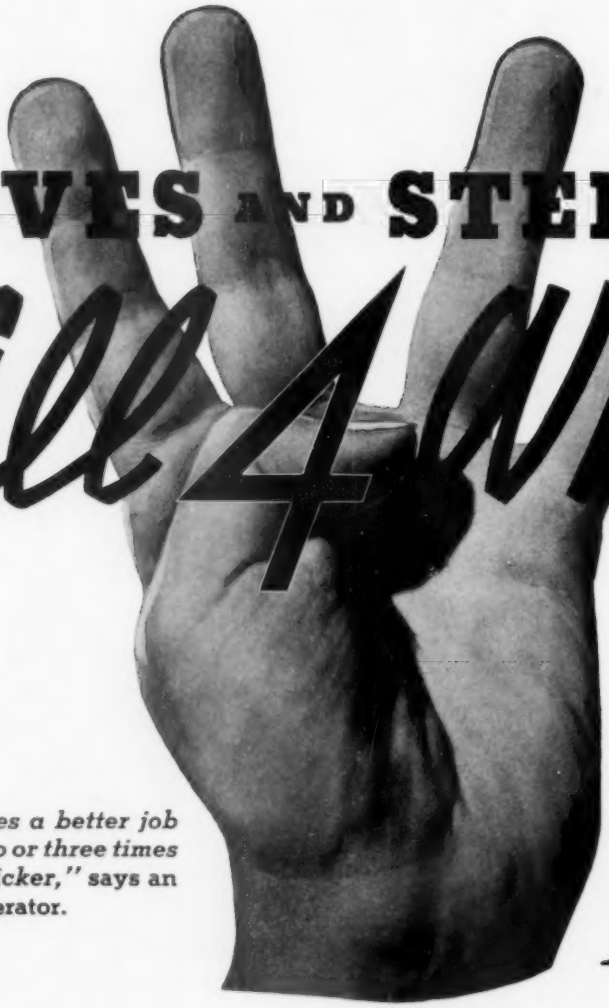
From time to time, after consultation with the district foreman, the standard to be attained is brought into line with actual conditions, and thus it is always possible to ascertain how performance measures up to the standard last established.

The Public Works Department is not charged with the expense of the welfare men, and therefore the true labor costs cannot be expressed in dollars. Even if the welfare expense were charged to Public Works operations, the true cost could not be obtained, because of great variations in efficiency and ability of these men. It is therefore necessary to establish a record of accomplishment other than one based upon dollar costs. Our system was worked out with the assistance of Public Administration Service, some features being omitted while others were extended to meet Boston conditions.

Several alternatives have been suggested, and at present we are trying to get comparative units of cubic yards per man (direct labor, regular and welfare) and cubic yards per mile cleaned.

The work in the market district is done at night, and in all other districts the work starts at either 6 or 7 A.M.

DRIVES AND STEERS ON *all 4 Wheels*



"worth any two similar machines I ever saw work on this kind of job." A Bureau of Public Roads Engineer.

"does a better job two or three times quicker," says an operator.

A State Highway Dept. Engineer says *"we should put a machine like this in every district."*

In January a New Machine Will Be Offered by Austin-Western

★ **On display at the Cleveland Road Show, January 17th-21st**

THE AUSTIN-WESTERN ROAD MACHINERY CO.

Aurora, Illinois

99MG797

Austin-Western

Eight hours comprise the working day; no overtime is paid for, but men are allowed an equal number of days off.

The pay for labor is $5.00 per day; for chauffeurs, $5.50 per day. Sub-foremen, called inspectors, receive an annual salary of from $1,700 to $2,100, and foremen from $2,100 to $2,500.

A supervisor is in charge of direct operations and to him the foremen are responsible. There is, of course, a stable and garage force, and an office staff in the Division Engineer's office handles finance, reports and statistics. For preventive work, we have six constables, who serve notices upon violators of street cleaning ordinances.

The expenditures for street cleaning in 1936, exclusive of Welfare Department expenditures, were as follows:

Street cleaning service	$658,273.76
Paving service	183,018.68
Total	$841,292.44

Control of Hydrants for Filling Street Flushers

A CITY in upstate New York reported to the Conference of Mayors and Other Municipal Officials of New York State that it was experiencing difficulty resulting from the use of its fire hydrants for filling city-owned street flushers and sweepers. It was stated that these flushers and sweepers were being filled by hose directly from a hydrant which was only partially turned on, causing some seepage that undermined the pavements surrounding the hydrant and also damaged the seat of the hydrant valve because of variations in pressure. To remedy these alleged conditions, it was proposed that the filling of flushers and sweepers at hydrants be permitted only through a 2½-inch gate pressure valve attached to the hydrant. The New York State Bureau of Municipal Information of the Conference of Mayors and Other Municipal Officials questioned its member cities in New York State regarding this problem and secured a number of interesting replies which we are privileged to present to our readers.

Auburn has had the same trouble, especially with the vibration of pipes in nearby houses. It has overcome the difficulty by directing that only certain hydrants be used, and these must be turned on full and closed tightly afterwards.

Buffalo reports that the drains on practically all the hydrants in the city of Buffalo are plugged, and no seepage takes place, regardless of the position of the hydrant valve. They have also had considerable trouble with the filling of street flushers from hydrants due to the careless operation of the hydrants by Street Department employees. The greatest damage has been caused by closing the hydrants too fast, creating back pressure which has broken a number of large services and several water mains. This trouble has been reduced to a minimum by constant warnings to these employees, and a new ordinance is being considered to permit only authorized employees of the Water Department or Fire Department to operate the hydrants.

Corning has not had any trouble with the hydrants for filling flushers, but has had trouble on such occasions as furnishing water for concrete on construction work. This has been overcome by issuing hydrant caps with a faucet attached, and requiring that the hydrant be fully opened when water is drawn.

Cortland has had trouble and now designates certain hydrants where the pressure is a minimum for the locality, and they are turned on full. The use of designated hydrants only is permitted and then only after employees have been instructed as to how they shall be used.

Glens Falls reports that it has overcome the troubles it previously experienced with the operation of its hydrants for filling flushers, by the installation of a Heim flusher valve which has an independent wheel gate with a depressed enclosed nut, so that the hydrant cannot be opened without the wheel. This valve screws onto one of the hose connections and has a hose connection at its outlet. Full pressure is on at all times in the hydrant. City employees and the Fire Department have a wheel for operating the valve.

Gloversville, on special hydrants at different points throughout the city, installs a 2½-inch hose valve, so that the man operating the flusher can open the hydrant once and take several loads for that section as he needs them, by the use of the valve, thus making it unnecessary to open and close the entire hydrant each time a load is taken.

Kingston limits the use of hydrants to a certain few which can be inspected frequently.

Little Falls has had some trouble, so a gate valve is installed on the hydrant connection, and the hydrant valve is opened completely. If the hydrant is in good condition, no trouble results. The same method is used in *Ithaca*.

Mechanicville does not use power flushers but they do flush the streets by hand hose, and have experienced some trouble with undermining due to partially opened hydrants. They consider the gate-valve is a good solution.

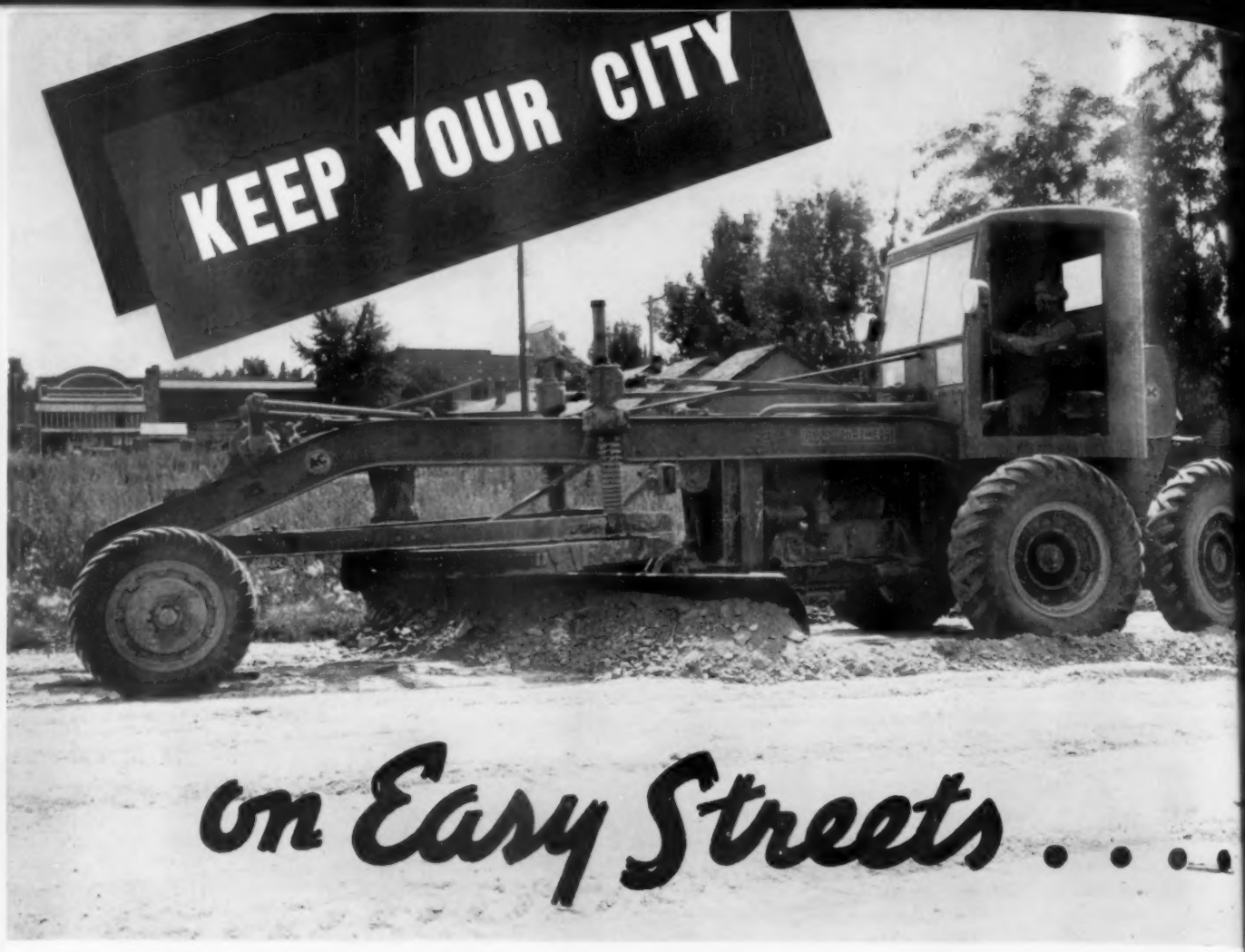
Oneonta has had some trouble with undermining, so the Public Works Department has been instructed to open the hydrants wide or they would not be permitted to use them. A small gate-valve is used on the hydrants for street and sidewalk concrete work.

Schenectady has found the chief difficulty to be that flusher operators fail to shut the hydrants down completely after filling the flusher tank. This has occurred in business districts, causing water from the hydrant waste valve to seep into basements. This trouble has been overcome by either refusing the use of hydrants to the Street Department or guaranteeing that the hydrants will be properly operated. They have not found it necessary to use independent shut-off valves.

Syracuse has tried to educate those using fire hydrants to close them tight when they are through with the hydrants. A regular hydrant inspection routine is maintained by a trained force of men.

Watertown has installed a 2½-inch hydrant valve with a wheel-handle and keeps the hydrant opened full. These valves are placed in districts where street flushers can be filled with a minimum loss of time and with the shortest haul.

Watervliet has corrected the trouble through education of the sweeper and flusher operators.



For winter smoothness — Baker Snow Plow mounted on a Model 54 Speed Patrol. (Above) Model "K" 54 Speed Patrol smoothing the streets of Filer, Idaho.

● ● ● streets that are easy on the taxpayer's auto, easy on the taxpayer's temper, easy on the taxpayer's pocketbook—winter and summer. It's a simple job with Allis-Chalmers Speed Patrols because they are correctly BALANCED to give you the EFFECTIVE BLADE PRESSURE essential to smooth, even work. Center engine mounting distributes weight evenly between front end, blade and rear end—instead of prying up against the blade, the engine's weight pushes *downward* and so increases blade pressure. Greater front-end weight holds the Speed Patrol to the street, assures more effective work, prevents side-slipping in heavy going and makes steering easier. Stout, all-bolted construction assures complete wear take-up, longer life and lower repair cost. Ask your nearest A-C dealer to show you how the correct weight distribution and balanced design of Allis-Chalmers Speed Patrols give you the powerful, ground-gripping traction, tremendous blade pressure, positive steering and long life necessary to fast, low-cost, year-round street maintenance.

SEND FOR FREE CATALOG

ALLIS-CHALMERS MANUFACTURING CO.,
Tractor Division, Milwaukee, Wis., U. S. A.

GENTLEMEN: I want to know how Allis-Chalmers Speed Patrols can keep our city on Easy Streets. Please send me catalog covering Speed Patrols. ( ). Ask your dealer to call. ( ).

Name .....

City .....

State .....

ALLIS-CHALMERS
TRACTOR DIVISION—MILWAUKEE, U. S. A.

Birmingham Grade-Separation Projects

City Engineering Department Plans Used by State Highway Department

THE city of Birmingham, Ala., is literally latticed with the tracks of the many railroads serving its industries. They cross and recross the streets, creating hazardous conditions and frequent delays to the heavy vehicular traffic. This condition had increased rapidly with the recovery of the industries, so the City Engineering Department under the direction of J. D. Webb, City Engineer, prepared an extensive program of grade-crossing elimination to get the major tracks separated from the streets. The plans for this work were submitted to the State Highway Department and the U. S. Bureau of Public Roads, and with only minor changes the work was undertaken on five large crossings involving seven railroads.

The projects were: (1) at 27th Street and 15th Avenue an underpass beneath the Frisco lines; (2) in the southwestern section of the city an underpass beneath the A. G. S.; (3) in the eastern section of the city an underpass beneath the Seaboard lines; and (4) at East Thomas Boulevard two underpasses and two overheads, involving the tracks of the Frisco, the Birmingham-Southern, the Frisco yard tracks, the L & N, the Southern, the yard tracks of the Republic Steel Co., the Illinois Central, and the local street-railway company.

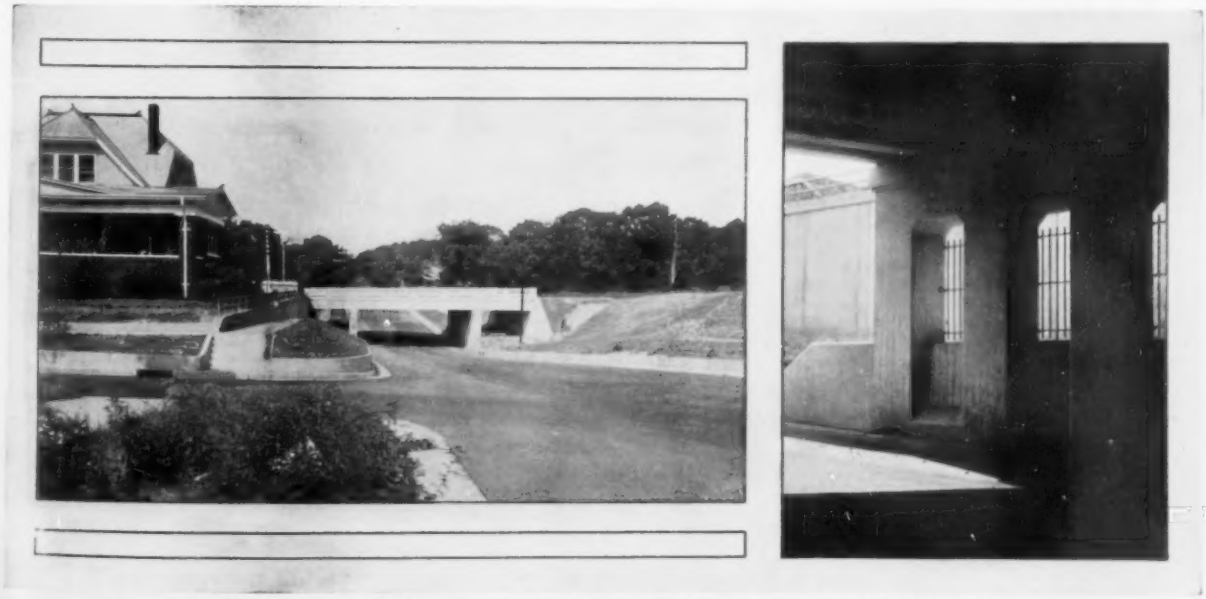
On all the projects the street width was maintained at 40 feet, and the approaches were controlled by the grades of the streets and the adjacent property. The maximum grade on any underpass is 8 per cent. Gravity drainage has been provided for every one of the underpasses, thus eliminating the constant maintenance costs of pumps and controls. The work was all financed under the Hayden-Cartwright Act, which provided for certain work to be done in the elimination of grade crossings, and work on state highways within the corporate limits of cities. The city's contribution to the program was the acquisition of the right-of-way, and responsibility for property damage. These were held to a minimum by the careful design of the structures. The fact that the designs originated in the office of the City Engineer accounts for the careful attention to this factor.

A Typical Underpass

The 15th Avenue and 27th Street underpass in a residential section is typical of the construction throughout. The railroad tracks are carried on a plate girder structure with a steel deck welded and waterproofed. On the outside a reinforced concrete beam independent of the steel structure eliminates the possible damage to the concrete through the vibration of the heavy trains, and provides an architectural effect that is very pleasing.

Within the underpass are recessed lights, providing good illumination to prevent it from becoming a hangout for undesirable characters at night, and the lights are protected by heavy wire screens to prevent easy breakage by hastily thrown stones. The spaces between the supporting columns, which also divide the sidewalk from the roadway, have gratings between, so that pedestrians walking through the raised sidewalk will not have an opportunity to fall through onto the roadway. This sidewalk is 6 feet above the roadway, and is 15 feet wide, which includes the 6-foot paved section.

On the large grade-elimination job, mentioned last in the list above, the roadway was depressed 6 feet and the tracks elevated 12 feet. These structures are more ornate than the other projects and have the steel girders exposed.



A TYPICAL ATTRACTIVE UNDERPASS IN A RESIDENTIAL SECTION OF BIRMINGHAM, ALA.

The underpass at 15th Avenue and 27th Street beneath the tracks of the Southern and Frisco. Note the steps, retaining walls, architectural treatment and, in the right-hand illustration, the protective gratings

DALLAS POLICE WORK 5 TIMES FASTER with RADIO

...says Chief R. L. Jones

"OUR Western Electric radio is of immeasurable value daily in the quick apprehension of criminals," says Chief of Police R. L. Jones of Dallas, Texas. "It takes only about 2 minutes for a radio patrol car to answer a call. Prior to our use of radio, the service rendered was five times or more slower."

Dallas has been using Western Electric 1-way radio since October 1931—is planning now to make it 2-way (which can be done by simply installing transmitters in cars and a receiver at headquarters).

The city area of 43.6 square miles is patrolled by 65 cars and 33 motorcycles, all radio equipped. The police transmitter also serves 34 radio equipped fire trucks and broadcasts police alarms to the counties of Dallas, Ellis and Kaufman.

For details on Western Electric equipment: Graybar Electric, Graybar Building, New York.

Distributed by GraybaR

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POLICE RADIO TELEPHONE EQUIPMENT

The Evolution of Design of a Storm-Water Trunk Sewer

Modifications of Sewer Sections Produce Saving in Construction Costs of Storm-Water Sewer at Flushing Meadow Park, Long Island, N. Y.

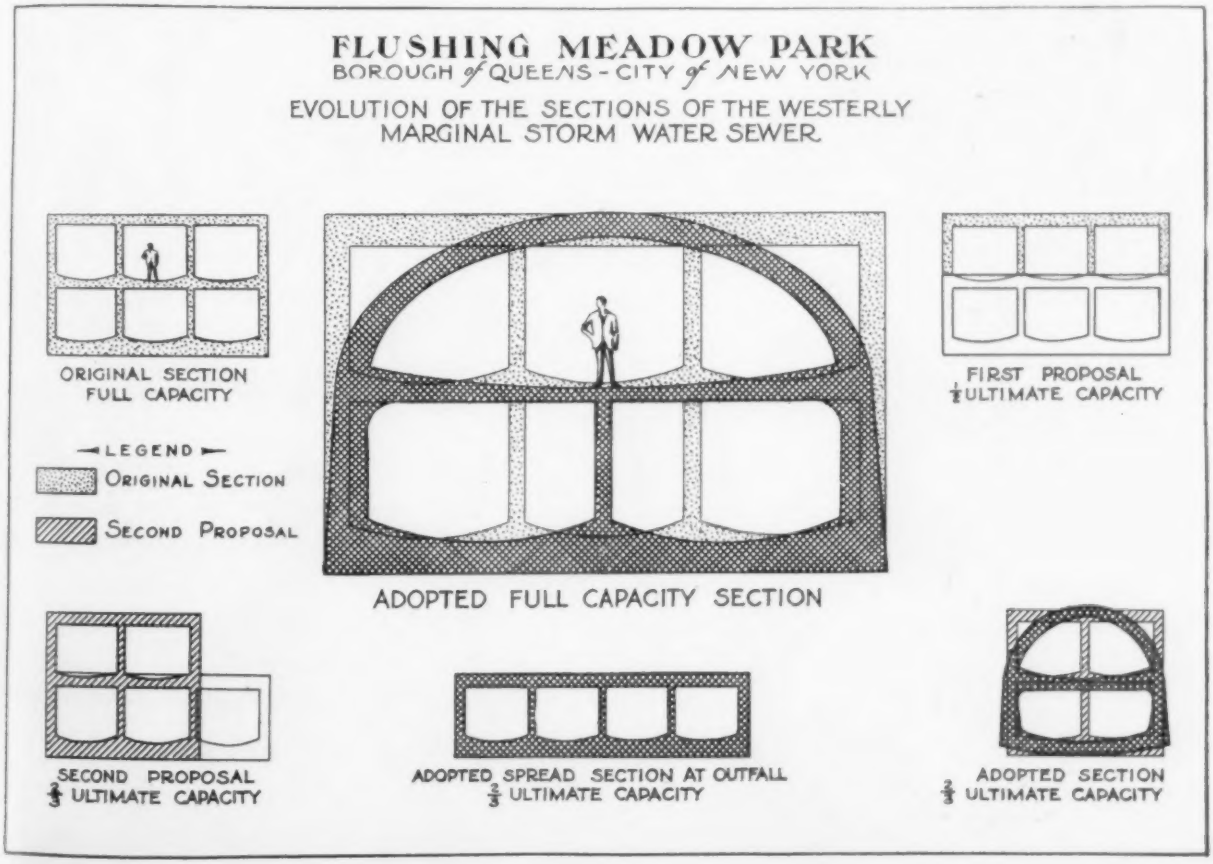
IN keeping with its long-established practice, the Sewer Bureau of the borough of Queens, New York City, designs its sewers to meet the reasonable needs of the areas to be served; that is, the coefficients of run-off employed in these designs are taken only large enough to anticipate the probable type and intensity of development over a limited period of time. The soundness of this principle is manifest when one considers that otherwise unduly large sewers would be required. Further, it is the practice of the Sewer Bureau, in developing its construction program, to build the trunk sewers of partial capacity; that is, of one-half, one-third or even one-quarter of the ultimate required capacity, and, as the immediate requirements of the district demand, add to the sewers the supplementary construction that may be required to properly drain the area in question.

This policy is of direct economic benefit to the property owners. As a result, the owners are paying a minimum for the service rendered and, furthermore, they are paying for sewer capacity only as it is needed. By this method, payment of the total cost in full is deferred for the longest time. Should an area develop beyond the expectations anticipated in the design of the sewers, it is only necessary to add relief lines to supplement the existing structures. Therefore, in all cases involved, the expenditures are commensurate with the sewerage facilities actually required.

As a matter of course these principles were applied to the sewers proposed in the area immediately adjacent to Flushing Meadow Park, the site of the New York World's Fair of 1939, and were tempered only by such practical considerations as ease of present construction, difficulty of future construction, danger to the then existing structures by supplementary construction, available space and requirements of other underground public utility facilities, and economy of construction.

The Flushing Meadow Park Sewer

While the functions of the Sewer Bureau are distinct and separate from those of the Park Department, it was


FLUSHING MEADOW PARK
BOROUGH of QUEENS - CITY of NEW YORK
EVOLUTION OF THE SECTIONS OF THE WESTERLY MARGINAL STORM WATER SEWER
ORIGINAL SECTION FULL CAPACITY
LEGEND
ORIGINAL SECTION
SECOND PROPOSAL
FIRST PROPOSAL 1/2 ULTIMATE CAPACITY
ADOPTED FULL CAPACITY SECTION
SECOND PROPOSAL 2/3 ULTIMATE CAPACITY
ADOPTED SPREAD SECTION AT OUTFALL 2/3 ULTIMATE CAPACITY
ADOPTED SECTION 2/3 ULTIMATE CAPACITY

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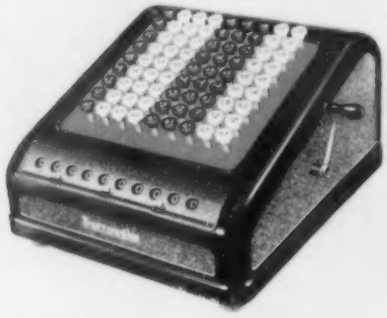
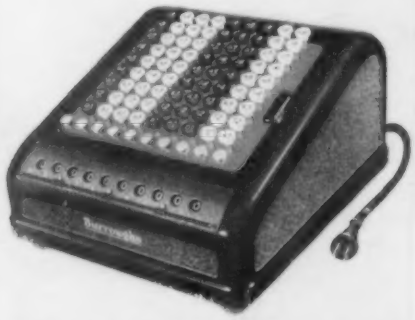
A small six-column calculator for handling small amounts. It assures low equipment costs where a machine of larger capacity is not required.



The many styles of Burroughs Calculators include machines of six, ten and fourteen column totaling capacities, fractional keyboards, electric or hand operation.



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TWO TOTALS

The individual totals in the front dials are transferred electrically to the rear dials where they accumulate into a grand total.

DIRECT SUBTRACTION

A mere touch of this key subtracts an amount directly from the grand total without the use of complements.

FAST . . . QUIET ELECTRIC

Provides a faster, simpler way to accumulate individual calculations into a grand total. Direct subtraction, fast electric transfer, electric clearance, and positive electric key touch speed up the work and enforce accuracy. Other Burroughs Calculators of various totaling capacities also have new features, new advantages and new styles; thus, you can select the one that will give you the shortest, simplest operation on your particular job. For a demonstration or complete information, telephone the local Burroughs office, or write—

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6402 SECOND BOULEVARD, DETROIT, MICHIGAN

THERE'S A BURROUGHS CALCULATOR FOR EVERY TYPE OF CALCULATING

recognized at once by all concerned that the problems involved were so interrelated that only the closest cooperation would produce the desired results. Hence, complete liaison is maintained through the offices of the Basic Improvement Committee. The Committee is the clearing-house for all proposals, and for orders to proceed. In short, it is the general headquarters from which is being fought this war against stubborn nature, to wrest from the meadowlands what is to be Flushing Meadow Park.

It was at this G. H. Q. that the final routes for the sewers were determined after as many as eight distinct routes had been weighed in the balance. Foundations, length and shapes of sewers, encumbrances, future construction, and buildings above these sewers, were factors that helped tip the scale. It was here, too, that the decision was made to build the westerly marginal sewer at one-half its ultimate capacity, after several flexible combinations had been considered, with costs of supplementary construction and probable time which would elapse before such added work would be required. Then, too, anticipated accruals of savings of interest on deferred construction costs were computed and estimates made of the length of time required to make these accruals equal to the cost of construction.

The ultimate trunk sewer along the westerly margin of Flushing Meadow Park was planned as a double-deck line, each deck to have a capacity of 1,100 cubic feet per second, and each deck to be divided into three equal barrels. This type of construction became possible only because the tributary trunks issued from two valleys at a differential in elevation of about 10 feet and at right angles to each other. The double-deck sewer was so proportioned that none of the available head was sacrificed, and this fact in turn made it possible to keep the width of the structure at irreducible limits. This afforded real economy. The over-all width of the structure would be about 38 feet.

Obstacles Ahead

The Sewer Bureau had its orders. General Headquarters said half-capacity. However, there were still three very decided obstacles which had to be overcome.

First: As the double-deck structure took its sewage from trunk sewers at two different levels, by building half-capacity sewers, that is, the lower deck, all the sewage would be brought down to the level of the lower trunk. There would be danger that the streets served by the latter trunk might be flooded by the waters coming from the higher levels. Indeed, this latter sewer was at a higher elevation than the streets served by the first trunk.

Second: By building the lower deck alone, it became necessary to almost triple the thickness of the concrete which formed its roof. If the double-deck sewer were built at one time, this slab of concrete would be only a thin membrane supporting sewage of a depth of about 7 feet 6 inches. Under the proposed arrangement it would be required to support, at the worst section, upwards of 30 feet of earth backfill. As a result of this increase in thickness of the center slab, the available area of the upper deck would be restricted.

Third: By building the lower deck alone, it became necessary to excavate a trench the full width of the structure, construct the sewer, and then backfill for the full width. When the supplementary construction was required, all this backfill would have to be excavated again before the actual addition could be made. The double handling of material would prove expensive, even though a lapse of fifteen years intervened.

Hence, the Bureau of Sewers proposed to construct these lines somewhat differently, and thereby circumvent all three of the objections presented. It was decided to construct two barrels of the lower deck and two barrels of the upper deck at one time, and to defer the construction of the remaining barrel of each deck until it became necessary. This decision overcame each of the three objections previously mentioned. The diagram shows the evolution of the sections of the westerly marginal storm-water sewer.

ACKNOWLEDGMENT.—The text of this article and the diagram are reproduced through the courtesy of the Department of Parks, City of New York.

New County Charter Provides for Department of Planning

AN important feature of the new charter of Westchester County, N. Y., which was approved by a majority of some 19,000 votes at the November election, is its provision for a Department of Planning. The charter empowers the County Board to determine the powers and duties of the Department, and stipulates that:

"Such Act shall provide that the Department of Planning, after public hearing and consultation with town, village and city officials, shall prepare and recommend to the County Board for adoption a master plan for the physical development of the county, and shall contain among others provisions with respect to the following subjects: (1) the method of adoption of such master plan or amendments or extensions thereof as may be recommended by the Department of Planning, provided, that in so far as the same relates to any portion of any city or village, the adoption of such plan shall be ineffective therein unless the governing body of such city or village adopts and approves the same; (2) the enforcement of such master plan or amendments or extensions thereof as may be adopted by the County Board; (3) the protection of property of the county, including parks and parkways, against direct encroachment, and the areas bordering on them against deleterious uses; (4) the filing of ordinances or maps, the approval of plats, the issuance of permits; and any other matters deemed desirable by the County Board; (5) prepare and submit annually its recommendations in regard to a proposed capital budget and capital program in accordance with the provisions of this Act."

The charter provides that the county planning commission shall consist of one resident of each of the cities of the county, one resident of each of three villages in the county, and two residents of the area outside of any village or incorporated village.

Planning Marches On

REVIEWING its advisory efforts to stimulate local and state planning and to encourage decentralization of planning activities, in a Progress Report released November 10, the National Resources Committee predicts that state planning boards, of which there are now 46, will increase their resources and usefulness through closer cooperation with other groups and because many state legislatures have increased planning appropriations. Organization of more than 400 county planning boards is described by the Committee as "an encouraging sign of the awareness of the rural population to planning problems." A few states are grouping together county planning boards into "district planning agencies." Of the 1,700 towns and cities which have developed some form of planning or zoning, 1,200 have continuous planning boards for making necessary adjustments in zoning ordinances and to initiate plans for thoroughfares, parks, playgrounds and other physical improvements. Continuous planning is needed for the conservation of our national resources—natural and human.

GMC *Announces* FOR 1938

- IMPROVED DUAL-TONE APPEARANCE
- GREATER DRIVER COMFORT AND CONVENIENCE
- BIGGEST STANDARD BODIES IN THE INDUSTRY
- MECHANICAL BETTERMENTS
- GMC PRICES STILL CROWDING THE LOWEST
- LOWEST PRICES FOR STANDARD CAB-OVER-ENGINE MODELS

GMC offers for 1938 three new fast-duty models, a new ¾-ton, a new 1-ton—and a stalwartly built 1¼-ton model. GMC introduces a long list of mechanical betterments, notably improving its extensive line. GMC unveils a new stream-style dress, a still finer evolution of its already famous "Dual-Tone" design. And GMC offers all models ½ to 12 tons *at prices that are still crowding the lowest!* See these trucks—see your GMC dealer.

THE TRUCK OF VALUE GMC

Three **NEW MODELS** *and a* **FULL LINE ½ TO 12 TONS**

Built to shoulder loads not practical for lighter trucks, GMC's new ¾-ton, new 1-ton, and new 1¼-ton models are stoutly framed, amply powered, and equipped with the biggest standard bodies (panel, pick-up and stake) that trucks in this class afford! GMC now offers longer-life trucks in the "light heavy-weight" class—sized for every specific haulage requirement—and all with GMC traditional high quality—all priced down near the lowest!

new 3/4-TON

new 1-TON

new 1½-TON

GENERAL MOTORS TRUCKS & TRAILERS

Accounting Time Cut in Half

By D. C. MILLER
City Comptroller, Memphis, Tenn.

MACHINE accounting, recently introduced in the city comptroller's office of Memphis, Tenn., has cut in half the time formerly required to handle the $6,000,000 annual transactions of the city corporation. Mechanized payroll procedure, also set up as part of the modernization plan, now completes in two hours a job over which the paymaster once toiled for three days.

Kept for many years in ponderous hand-written ledgers, the city's accounts have been steadily increasing in volume, until the need for greater speed and efficiency pointed unmistakably to machines. The population of Memphis has grown from 162,351 in 1920 to 283,225 today, with every prospect of a 300,000 population in the next Federal census. Governmental duties have accordingly become heavier and broader, especially since the annexation of 20.3 square miles of suburbs in 1929, which makes the present area of the city approximately 50 square miles.

Modern progress has created new governmental agencies, such as the Municipal Airport, Housing Authority, Welfare Commission, Art Commission, Harbor Commission, City Beautiful Commission, and Memphis Employment Center. For the past seven years, Memphis has been carrying on a city-Federal works program involving $20,000,000 worth of improvements, with many projects still in progress. Two construction projects are now pending, one a $9,000,000 municipal distribution system for TVA power, for which a third of the bonds have been issued and considerable preliminary work done, and a $2,000,000 intercepting sewer on which preliminary work is under way. Besides these factors swelling the tide of accounting work in the comptroller's office, mounting tax collections and a drive on delinquency have contributed their quota.

Desiring that Memphis keep abreast of the most progressive developments in city government, Mayor Watkins Overton initiated a detailed survey of the city's financial set-up and accounting system, completed last spring.

In the reorganization of the city government undertaken

"THE BOOKKEEPING MACHINE HAS SIX REGISTERS"

at that time, the office of City Clerk was abolished and that of City Comptroller substituted, giving the latter complete control of budgetary matters. This added further to the work of the division and brought out forcibly the need for detailed and readily available information for budgetary use. As a result, a Burroughs bookkeeping machine was installed, with Addressograph and Graphotype machines for payrolls. The latter are operated in the printing department established this year under the supervision of the personnel department.

The bookkeeping machine has six registers. In one operation, it handles check, voucher, duplicate voucher, ledger sheet, check register journal, and duplicate—which were formerly six separate operations by hand. It also handles in one operation the preparation of voucher, remittance statement, posting of liability to vendor's account, and register of audited invoices.

The Addressograph machine puts the date and name on checks, which are then run through a Todd check protector.

With the machines, the accounting staff can easily handle the heavy volume of work represented by such a record month as June, when transactions totaled $6,043,731.78, of which $3,000,000 was a TVA bond sale. There are 11 persons in the city comptroller's office, including the comptroller, two deputy comptrollers, auditor, accountant, machine operator, paymaster and his assistant, two stenographers, and a clerk.

"ADDRESSOGRAPH PRINTS DATE AND NAME ON CHECKS . . . WHICH ARE THEN RUN THROUGH A CHECK PROTECTOR"

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In countless communities motorcycle patrols have proved the most helpful means of *preventing* these highway tragedies. But when accidents *do* occur it's important that a responsible officer get to the scene quickly to aid the injured, ascertain responsibility. *Depend on Indian for lightning-quick response!*

For flexibility, ease of handling and definite economy, Indian Motocycles completely outstrip any other form of police transportation. Indian "Police Specials" are specially constructed for gruelling police work — feature left-hand throttle, dry sump oiling, leaf spring front fork and other exclusive advantages. Write for *proof!*

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THE PRIDE OF THE FORCE

Automatically-Cleaned Bar Screens, Their Care and Operation

Proper Maintenance of Another Piece of Equipment Used in Sewage-Treatment Plants Discussed by an Expert

By H. F. WATSON
Engineer, Link-Belt Company, Philadelphia

AUTOMATIC mechanically raked bar screens are found today in a large number of sewage-treatment plants. They are of three general types: (1) those having the rake operated by linkage motions; (2) those having the rake carried on endless chains; and (3) those where the rake is of the reciprocating type, using wire ropes to raise and lower it. These three types, while differing in the mechanical principles applied to their design, have several things in common. They are all self-contained mechanical units. They are motor-driven through modern enclosed transmission gears. The automatic operation feature is obtained through the use of electrical control units.

After a bar screen has been carefully selected, fabricated, and installed, its fate is in the hands of the plant operator. The useful life-span of the machine, and its value as an investment, are entirely dependent upon the care with which it is operated and kept in condition by him.

Selecting the Operating Cycle

Rack cleaners should be operated just often enough to prevent the building-up of excessive head on the screen bars. The best type of operating cycle adjustment is that obtained through the use of electric timers with two gears quickly changed. One gear gives a selective series of short cycles for use during the period of high flows when the rags are coming into the plant. The second gives cycles with longer periods of rest, and should be used at night when the low flows occur. Machines operated with shorter rest periods than necessary are being subjected to needless wear.

Lubrication

Proper and frequent lubrication of the moving parts is the most important single item of maintenance in the operation of a bar screen. Lack of lubrication means destructive wear of the part neglected and causes heavier loads, with resulting needless wear, on other associated moving parts. All moving parts of the screen mechanism should be oiled or greased on some regular schedule. Most manufacturers supply the plant operator with some form of operating manual in which they note the principal points to be lubricated and the kind of grease or oil to be used. There are also in every screen a number of places, usually not readily noticed, that require occasional oiling. A good plan to follow is to inspect the machine carefully when first installed, locate all surfaces that turn or slide on each other ever so little, and oil or grease them at regular intervals unless specifically instructed not to do so.

Motorized speed reducers or gear-motors require very little attention other than keeping them filled with the proper oil. The level should be checked at frequent intervals when equipment is new, as leakage sometimes occurs which may lower the oil level rapidly. Oil leakage in a reducer should be reported to the reducer manufacturers as soon as observed, so that they can correct it or instruct the operator how to do so on the job. Speed reducers should not be taken apart for inspection or repair by anyone except an expert mechanic.

Link chains and the guides for them are, as a rule, sufficiently lubricated by the grease found in domestic sewage. Occasionally, however, installations will be found where additional lubrication is required. A heavy waterproof grease should be used on the guides, and the chains lubricated with a heavy oil, in such cases.

Care of Motors

Motors should be kept clean by blowing them out with compressed air at intervals. If compressed air is not available, an ordinary vacuum cleaner may be used to advantage. The instruction card attached to the motor when received should be preserved, and the lubrication instructions printed on it carefully followed. The drive end bearing of motors used on motorized reducers is usually lubricated automatically through the oiling system of the reducer itself.

Contact points and terminals on all electrical control units should be cleaned when they show signs of corrosion. A light coating of vaseline on these points will help prevent corrosion. Doors to control boxes and covers on all electrical instruments should be kept closed at all times to prevent the entry of gas and moisture-laden air, which cause rapid deterioration and corrosion of the delicate parts of which the instruments are composed. Switch wheels and levers should be oiled at regular intervals.

Care of Chains and Wire Ropes

The endless chains used on the chain and rake type bar screen should be kept at the proper tension at all times. They should be just loose enough to operate freely. Slack

One of the attractive new concrete streets recently built at South Haven, Mich. Locally financed program of .8 mile per year was stepped up to 1.17 miles in 1935 and to 1.21 miles in 1937, while in 1936 with the aid of a PWA grant, 2.08 miles were constructed. S. H. Smith is city engineer.

REDUCTION OF STREET MAINTENANCE AND RESURFACING COSTS, ONE OBJECTIVE AT SOUTH HAVEN

When South Haven, Mich. (population 5,000), decided in 1934 to do something about its streets, it had

—15.7 miles of streets that were unimproved or that would undoubtedly need improvement within a few years.

—And an excessive bill for maintaining these streets; in fact an upkeep expenditure large enough to pay for a considerable amount of new pavement.

In contrast the city found that its 3 miles of concrete streets had required very little surface maintenance.

What was more natural than to decide on a program of replacing these high-upkeep streets gradually with enduring concrete. A program was adopted for paving an average of .8 mile each year for 15 years.

Many blocks of smooth riding, attractive concrete pavement are now in service. The program is financed 60% from municipal funds and 40% from assessments on property benefited.

Why not adopt a definite plan to build up your city's streets with safe, non-skid, enduring concrete.

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THE MORE CONCRETE THE LESS STREET MAINTENANCE

Why not remember to mention THE AMERICAN CITY?

should be kept out of them by adjusting the head shaft by means of the screws provided for the purpose. Slack, if present, will accumulate at the bottom turn, and is likely to be overlooked until some damage results. A suggested method of adjusting the chains is to push the head shaft up hard as far as the chains will allow, and then turn the take-up screws backwards just enough to remove the excess strain in the chains, say one-quarter or one-half turn. Care should be taken to adjust both sides of the machine the same amount and keep the headshaft level.

The wire ropes used on the reciprocating type bar screen should be adjusted when necessary, to keep the rake square with the screen bars. Swabbing them with waterproof grease occasionally will increase their useful life considerably by preventing corrosion and reducing internal friction.

Screens should be kept clean. The best screens are those so designed that all parts above the waterline are easily reached with a stream of water from a hose. They should be washed down frequently to prevent odors and eliminate visual nuisance.

Paint Pays

A word about paint should not be amiss. Next to wear, corrosion is the principal enemy working to destroy sewage plant machinery. Repainting, which can be done at odd times, will prevent starting of corrosion. It also has its psychological value. A visitor examining a freshly painted machine, which is kept washed to prevent nuisance, will receive an impression of efficient operation which is hard to get across to him in any other way.

Sanitary Works in Ohio Aided by PWA and WPA

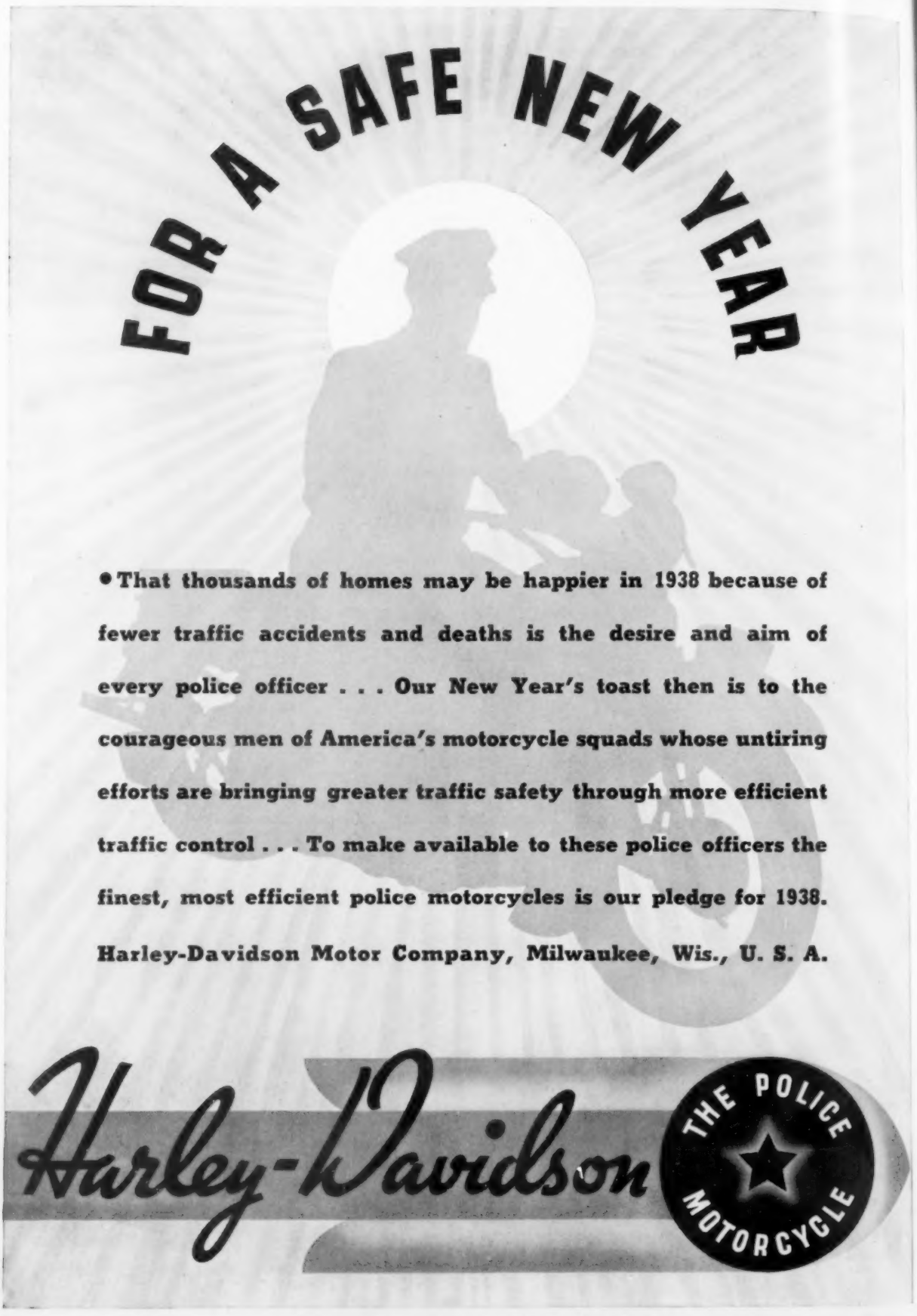
ACCORDING to the report of the Division of Sanitary Engineering of the Ohio Department of Health, Federal aid has greatly stimulated the volume of sanitary work undertaken in Ohio. The Federal aid program has been actively under way for three years. During this time, under PWA 108 water-works improvements valued at $15,486,719 have been completed, or are under construction; 88 sewerage and sewage-treatment improvements valued at $31,316,235 have been completed, or are under construction; making a total of 196 sanitary works, costing $46,802,954. Included in this list are 55 new water-works systems in villages previously without water-supply facilities, an increase of about 13 per cent in municipal water-supply systems; 35 new water-treatment plants, an increase of 33 per cent in such works; and 44 extensions to existing water-works systems. Also included in the foregoing PWA improvements are 13 new and complete sewerage systems; 29 new sewage-treatment plants, the latter an increase of 35 per cent in such works; and 65 extensions to existing sewerage systems.

WPA projects have included 368 water-works improvements, costing $4,326,000; 842 sewerage and sewage-treatment improvements, costing $15,591,000; and 22 swimming pool projects, costing $677,000. These WPA sanitary improvements total 1,232 projects, for which $20,594,000 has been spent. Included in the foregoing are 11 new water-works projects in villages previously without water-supply facilities; 4 new water-treatment plants; 24 new and complete sewerage systems; and 16 new sewage-treatment plants.

An important point to note with many of these sanitary improvements is that they are to a great extent self-supporting. Most of the new water-supply systems are being financed through mortgage revenue bonds; water and sewer systems may be declared utilities in Ohio and service charges used to amortize revenue bonds for the building of the works, as well as taking care of the operation of the utility. Previous to the advent of the Federal aid program of PWA and WPA, only two Ohio municipalities had ever availed themselves of the opportunity of financing water or sewerage improvements by means of mortgage revenue bonds, although provision for such financing has been specifically in the Ohio state constitution since 1912. As a result of the general acceptance of this method by the Federal PWA, other states have adopted similar statutory enabling acts in order that water and sewerage improvements might be installed and operated on a utility basis.

Sewer Construction in Minneapolis with Ready-Mixed Concrete

A CITY-OWNED TRUCK MIXER HELPS BUILD THE NEW SEWER SYSTEM IN MINNEAPOLIS, MINN. The City Engineering Department is directing this $2,000,000 project. The illustration shows one of the concrete mixers owned by the Department, mounted on a Ford V-8 truck, delivering concrete at a shaft


FOR A SAFE NEW YEAR
• That thousands of homes may be happier in 1938 because of fewer traffic accidents and deaths is the desire and aim of every police officer . . . Our New Year's toast then is to the courageous men of America's motorcycle squads whose untiring efforts are bringing greater traffic safety through more efficient traffic control . . . To make available to these police officers the finest, most efficient police motorcycles is our pledge for 1938.
Harley-Davidson Motor Company, Milwaukee, Wis., U. S. A.
Harley-Davidson
THE POLICE MOTORCYCLE

When you write for that catalog, kindly mention THE AMERICAN CITY.

New Jersey WPA Converts City Dump into a Park

Recreation Facilities Provided and Realty Values Enhanced

As a result of three Works Progress Administration projects completed in the city disposal area, a section of the Newark dump has been converted into a unit of the city's recreation system, according to a report from William H. J. Ely, New Jersey State WPA Administrator, to WPA headquarters at Washington, D. C. A concurrent benefit derived from the improvement is the correction of conditions adversely affecting real estate values in the vicinity.

Garbage-filled meadow-land with 1,600 feet frontage on the east side of Route 25 near the Newark Airport has been leveled, graded, drained, seeded and landscaped, and an odoriferous eyesore transformed into a park-like recreation area. Six tennis courts and a parking space have been laid out for future completion, and a soft-ball field and what is said to be one of the finest baseball diamonds in the country are already in use.

In addition to providing a valuable addition to Newark's recreation facilities, the projects have eliminated a serious traffic hazard by replacing a blind entrance road to the present dump site with a new "Y" entrance on the highway opposite Haynes Avenue, where a traffic signal is to be erected.

Thirty-one hundred feet of penetration asphalt roads 25 feet wide have been built from the highway to the dumps now in use, which begin approximately 1,300 feet beyond the reclaimed area.

It is planned to plant flowering trees and shrubs along the roadways, and to screen the recreation field from the dumps by a thick border of poplars, plantains and ailanthus trees tall enough to prevent dust and ashes from sifting over the area.

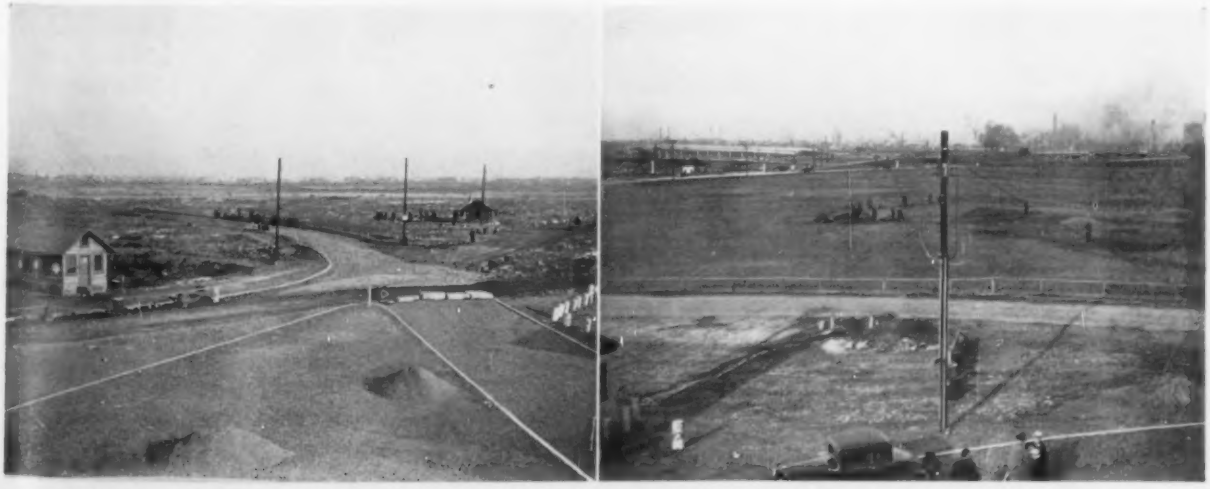
This reclamation and beautification not only improved the view along the highway and eliminated foul, germ-laden air, but also removed a serious obstacle to the sale of nearby business sites. The neighboring acres possess the advantage of proximity to air, rail, water and highway transportation facilities, and their future improvement will result in additional revenue for the city of Newark.

Incidental to this reclamation of land was the exodus of hundreds of rats that had infested the garbage heaps. Their holes were destroyed during the leveling and grading, and the occupants were either killed or driven deep into the meadow to the present dump site, where they have less ready access to the main highway and the outskirts of the city.

Temporary sanitary facilities and drinking fountains, installed while a WPA crew was laying water lines for fire protection in the city disposal area, remain in a permanent building for the convenience of the public.

Fire through spontaneous combustion is a constant problem and daily occurrence in every city dump, but is especially serious in the Newark disposal area because of the proximity to the Newark Airport. Smoke from burning garbage is heavy and acrid, hanging close to the ground. Should it drift toward the airport, its effect on visibility would prevent landings and takeoffs, and interfere with airline schedules.

In order to provide sufficient water to immediately extinguish such fires and thus eliminate smoke, WPA crews laid 300 feet of 6-inch fire lines and 400 feet of 4-inch line; and installed four vertical standards and two hydrants, the entire system being linked to a city water main. The pressure of 60 pounds per square inch is sufficient to quench any blaze before serious harm occurs.



LEFT—A SECTION OF THE NEWARK CITY DISPOSAL AREA IN THE PRELIMINARY STAGES OF ITS RECLAMATION.
RIGHT—RECLAIMED LAND BEING GRADED FOR USE AS A RECLAMATION AREA

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● The few extra dollars that it costs to build a brick pavement is the thriftiest expenditure a community can make. Brick's huge saving on upkeep soon makes it the cheapest. ¶ These savings in upkeep expense recur annually during the life of the pavement which frequently runs 40 years or more. ¶ The reasons: No other pavement can excel brick in resistance to traffic damage—*no other pavement can compare* with brick in resistance to weather damage. ¶ National Paving Brick Association, National Press Building, Washington, D. C.

32ND ANNUAL MEETING, NATIONAL PAVING BRICK ASSOCIATION, CINCINNATI, JAN. 13-14
EXHIBITOR A. R. B. A. ROAD SHOW, CLEVELAND, JAN. 17-21

Thrifty Annapolis, Md., paved King George Street with brick 40 years ago. Today it is still giving good service.

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FOR NEW CONSTRUCTION OR RESURFACE JOBS

Much Ado About Something—Housing

By EARLE S. DRAPER

MANY millions of words have been written in the past several years on the housing situation. Many people have investigated and attempted to portray accomplishments in low-cost housing in foreign lands. The sympathy of the observer has invariably colored his story. For example, England's housing activities since the World War have been both praised and condemned by American writers. Yet, both those who glorify and those who censure will admit that if the United States could have done something to stimulate normal building in the early years of the present decade, our unemployment problem during the late depression would have been much less severe.

So much has been written, and so confusing have been many of the articles, that the issues have become clouded, the real difficulties lost from sight. Slum clearance has been praised or questioned out of all proportion to its relationship to low-cost housing. Slum clearance is justified from the standpoint of improvement of health and morals and the lowering of governmental costs—without bringing in its value or effectiveness in rehousing. Some advocates contend that there can be no real accomplishment in low-cost housing without the government's actually taking over the reins and doing the entire job; others deprecate the need for even a modicum of public assistance. An extremely readable article compared residential building methods of today with the pre-war auto, as if the successful accomplishment of mass production of prefabricated houses spelled the answer. It would, in part, but only in part, and many years of technical experimentation will be necessary before it can be effective.

Out of more than three years of grappling with the problem of community development, house design and construction for a government corporation, and a lifetime of such private activity, I hope I have reached some understanding of the situation. Yet, no statement that any one of experience makes can be 100 per cent true. There are variables in every proposition, so that, in some instances, any conclusions I might reach would require qualification, or might vary in items of cost or proportion with different sections of the country. In the main, they seem to me to be statements of fact. Let me try to put some of these seeming facts in simple terms.

Definitions and Assumptions

Housing Defined.—By low-cost housing, I mean the provision of homes for families who can afford to pay not more than $25 a month rent, or not more than $3,000 total purchase cost.

Material and Labor Costs.—Houses have been and are being built—good houses, containing four to six rooms with bathroom and modern conveniences—both by public and private agencies, at first construction costs of from $1,500 to $3,000 for labor and material, with labor wage scales, in the instances hereinafter noted, above the average of nation-wide costs. The cost of the house itself is important—but not all-important. Other costs play an equally important part. Houses at Westacres, a rural development located near Pontiac, Mich., undertaken in 1935 largely with funds supplied by the late Senator James Couzens, were built at an average cost of $3,174.68 per house for labor and materials. At Norris, Tenn., cost of labor and materials for the lower-cost houses ranges from $1,031 for the duplex type, of wood construction, to $2,102 for fireproof, cinder block, four-room houses. At Pickwick, Tenn., houses built of wood range from $1,593 to $1,747 for material and labor.

Add 30 Per Cent to Labor and Materials.—Design, overhead and normal profit for the small private builder about equal the design, overhead, red tape and the cumbersome system of checks and balances of the large organization, whether government or private—normal cost, 20-30 per cent of labor and material. (Instances are reported of extremely low private costs, due to exceptional situations relative to purchase of materials, low labor costs or handling without proper allocation of all charges; and of high governmental building costs, where relief labor has been used and paid prevailing wages.) This item must be added to actual construction costs.

What Saving Prefabrication?—Prefabrication of houses with present-day materials cannot reduce normal costs of houses more than 15-20 per cent at the most. (Approximately half the cost of the house is labor and half materials. A saving of 30 per cent in reduced labor cost by machine methods of prefabrication—not yet accomplished in volume production—could only result in a net saving of 15 per cent, or $300 on a $2,000 house, a significant saving but not enough to lower rents appreciably. Any greater reduction through prefabrication of construction must await the testing and proven value of new building materials of lower first cost than wood, brick, cement, etc. (Some have been tested experimentally and seem to have real promise.)

Therefore, it seems to me that *the solution of the immediate problem of delayed residential construction in the low-cost field lies outside the question: Shall the government or private industry build? or Shall we develop mass production through prefabrication or hold to present methods?* Then what?

Who Pays for Land Improvements?—We cannot have houses without land and services: land to build on; streets, walkways, sewers, water, electricity or gas (or both), storm drainage, telephones, yard improvements, parks and playgrounds, schools and hospitals, and all the numerous public and private improvements necessary in modern life.

FOUR SIMPLE STEPS

1 The road is scarified for the width of the surface desired.

2 The surface is immediately bladed and rolled to break up the lumps and compact the surface.

3 Standard Asphaltic Road Oil is applied hot with a pressure distributor.

4 In some cases the road is barricaded for a short time to allow the oil to penetrate. Above is a typical Scott County, Iowa, road built up to a fine bituminous mat that may be traveled safely in all weather, the year around.

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● The problem of providing adequate farm-to-market highways on a limited road fund has been solved in many counties by the simple method of road treatment described here.

Like many others, Scott County, Iowa, utilizes the present road material without any additional aggregate. This can be mixed with Standard Asphalt Road Oil on the road.

By providing a method of yearly development this plan eliminates high initial investments and interest payments. Within a few short years, roads so treated develop a heavy bituminous mat that can be maintained with the minimum of expense and *all* at a yearly cost that any county can afford.

A Standard Asphalt representative can give you complete specifications and costs on Standard Road Oil construction. Communicate with the local Standard Oil office or write Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago, Illinois.

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(INDIANA)

Taxes Paid by Renters.—Except for the raw land with or without certain improvements, we are accustomed to seeing essential utilities and various services provided by a public agency, which in turn collects from the property owner in the form of taxes or assessments. The large property developer passes those costs on to the purchaser of a lot. The owner of the house, in addition to purchase cost of the land, must pay an annual tax for city improvements and services. The renter pays carrying charges on those same first costs, and assessed taxes, as a part of his rent.

What Proportion Rent to Cost?—In the average town or small city, an improved 50-foot residence lot, well situated, is worth $1,000, more or less, according to the type of improvements, representing services necessary for living. Larger lots are worth more. For a low-cost home, let us say, the lot costs $1,000 and the house costs $2,000; a modest garage, drive, service connections, yard improvements and incidentals cost $500. Then the owner lives in a HOME that costs $3,500. Figuring the most reasonable costs of interest and amortization, taxes, insurance and upkeep, he cannot live each year in the home for less than 10 per cent of the cost, $350. (Figures can be produced to show theoretically that the government should be able to develop and rent for about 7 per cent, but all factors must be unusually favorable, even with 3 per cent money, for this to be accomplished.)

Minimum Rent Returns to the Landlord.—Conversely, a landlord cannot afford to build and rent such a well-built, minimum-cost house for less than $350 a year—or under most favorable large-scale operation, with possible savings from wholesale purchases and partial prefabrication, plus A-1 credit and low interest, for less than $300 a year, or $25 a month.

Group House Savings?—Some think that group housing should cut costs. A slight saving can be made per unit for four-, six- or eight-family group houses, and some savings in reduced utility costs. Yet land costs are usually higher in sections where group houses are attractive to tenants. The American people as a whole are not accustomed to group housing and, except in metropolitan areas of high land values, the market for group house units and their rentable value are questionable.

Who Can Pay $25?—About 50 per cent of our people on the present level of wage returns cannot afford to pay as much as $25 a month.*

Therefore, the Realities!

Then, it's as plain as the nose on your face that this 50 per cent must at present either (a) continue to occupy substandard, obsolete housing as represented by dingy dwellings and slums in our cities and towns, or cottages and shacks lacking sanitary and reasonably modern conveniences in the rural areas, or (b) be subsidized by the government, either for a portion of the capital cost or rent to enable them to occupy what would universally be termed decent homes (barring some wholly unexpected and abrupt movement of the economic system that would suddenly raise this 50 per cent of people making low wage returns into the class of earners who could afford a payment of $25 a month or more rent—a most desirable social evolution and one that will likely come over a period of years as returns from resources become more fairly distributed among the workers).

Aid for the Lower 50 Per Cent

Very little of the present building, either public or private, is designed to reach the submerged 50 per cent. If we are going to reach that group—and thus solve in part some of the problems of health, morals, public costs† and welfare rightfully attributed to substandard housing—the assistance of the government seems necessary. That assistance can probably be in part attained through low-cost financing plus adequate control and development, in the public interest, of land subdivision, largely to prevent the excesses of speculative growth. For those at the bottom of the financial ladder there must be further subsidy in the form of actual capital or rental subsidies. There seems to be no alternative to government aid in low-cost housing for the submerged 50 per cent if their housing situation is to be improved. Such aid is now available for many cities under the United States Housing Act of 1937.

No known possibilities of mass production of houses can effect enough saving to permit of reaching a sufficiently low-cost level for homes for the lowest-income group. While opinions may differ as to exact percentages of the total or the minimum level of income that constitutes a market for private building operation, there is practical unanimity of agreement that there is a minimum, below which private industry cannot build at a profit to reach the purchaser. And that minimum cannot be greatly changed by any known possibility of savings in the cost of the house, because the cost of the *house* is roughly no more than half the total cost of the *home*. (The same ratio applies to the future annual carrying charges of home ownership or of renting a home.)

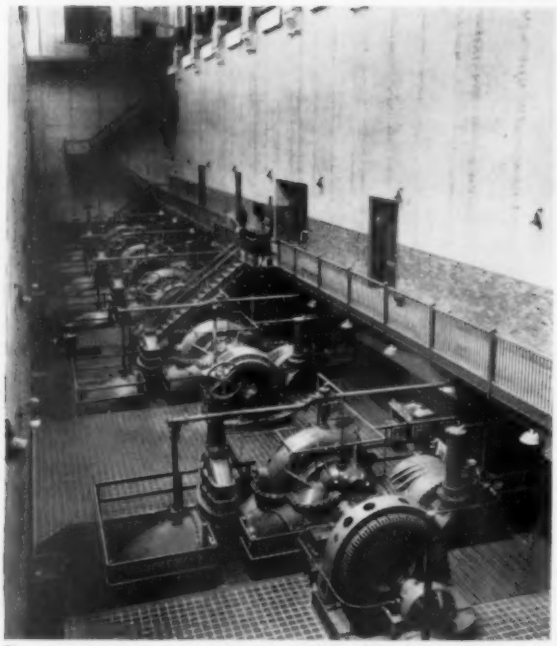
So, the country must decide whether we will continue on the present basis of using our obsolete houses and substandard shacks for the housing of those unable to pay for new low-cost homes (and some believe this to be inevitable as a necessary part of our system) *or* assist the lower-income group through subsidy to get decent homes, on the theory that housing for this group should be considered as a public service necessary to stamp out those evils of poor health, bad morals and unnecessarily high government costs resulting from substandard housing.

You Subsidize Now!

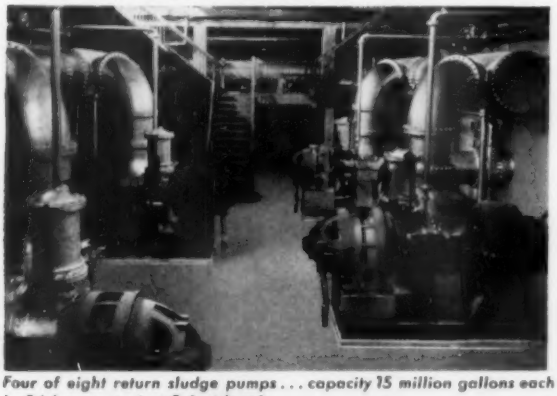
There is a precedent for such assistance, in that cities provide water and sewer facilities, health service, compulsory education, fire protection and many other facilities to *all the people* and pro-rate the costs by benefit assessments or on a city-wide basis. There is a subsidy in all these municipal services to all low-cost substandard residential neighborhoods. Perhaps this is the answer to those who state that it is out of accord with the American way of life for the wage-earner making $60 per month to live in a home of the same standard as one who earns $100 per month. If we are as contented paying for the results

* Leven, Moulton and Warburton: "America's Capacity to Consume," pp. 206-207. The Institute of Economics of the Brookings Institution Publication No. 56. For the year 1929: 19,506,200, or 39.77 per cent, earners earned $1,000 or less; 12,282,000, or 25.04 per cent, earners earned between $1,000 and $1,500. From the foregoing it is figured that 24,419,200, or 49.77 per cent, earners earned $1,200 or less.

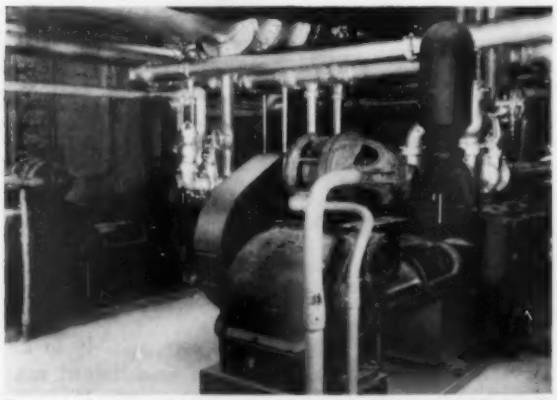
† Report submitted by The City Planning Board, Boston, Mass.: "The Income and Cost Survey of the City of Boston," 1935.



Six raw sewage pumping units . . . each for 90 million gallons in 24 hours, against 50 feet head. Direct-connected to 1000-hp. motors. These pumps have 48-inch discharge and 54-inch suction openings. Before shipment to Wards Island, each unit was tested, under full load, under conditions duplicating permanent operation



Four of eight return sludge pumps . . . capacity 15 million gallons each in 24 hours, against 9 feet head



Two of eight excess sludge pumps. Four units have a normal capacity of 560 gallons per minute each, four of 280 gallons per minute

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. . . . 26 Worthington Pumping Units, with an installed capacity of 665,000,000 gallons per day, perform all important pumping functions of this modern plant, one of the largest in the world.

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of bad housing, perhaps it would be a more constructive policy to subsidize *decent* housing!

The Dilemma of Slums and City Finances

Slum clearance in cities is rarely low-cost housing. Most slums should be cleared out and used for other than housing purposes, not rebuilt for residential use. Most land in cities occupied by slum dwellings is over-valued for low-cost housing and undesirable for better housing. Its value is speculative and has developed because adjacent land is being used for more profitable business undertakings. So such speculative land still in residential use pays the penalty of the higher values of adjacent business or apartment property. Now, in many cities land prices in blighted and slum areas are so high that our city fathers are between the devil and the deep blue sea (nor am I referring only to that area of Manhattan Island between Harlem and the Battery!); at present dizzy levels of costs within most developed urban areas of intensive use, land-assembly for low-rent housing is an impossibility; but if the assessor were to reduce values to put them on a comparable basis with low-cost, developed residential land in the suburbs (the $1,000 lot mentioned above), the city might as well go into bankruptcy. What's the answer?

Urban Land Values vs. the Small House

Well, the city cannot solve its problems overnight. If zoning had been thought of and adopted when cities started to grow, and had been honestly administered to hold speculation in check, we should have had areas of land within cities of reasonable value for residences. But it wasn't, so the city will have to go through a period of declining values for land not needed for uses that justify high assessments. Suburban land subdivision gives about five 50 x 125-foot lots to the acre—net. That means that when developed land goes above $5,000 an acre in sales value, moderate-cost, single-family homes are out of the picture. We can trace the limiting value for duplex and group houses in the same way through a higher range of land values—still not immeasurably higher.

City and Suburban Values

Certainly, when we reach values above $1 per square foot (43,560 square feet in an acre of land),—and much of the land occupied by slums in large cities is above that figure,— we impose too great a burden of land cost to be carried even by apartment buildings designed for the lower-income group. Many people have come to the conclusion that excessive land values will never be reduced appreciably until we face the fact that most high-value land within cities isn't worth the price for low-cost housing. Maybe it was a generation or more ago, before the days of rapid transit, radio, telephone, electricity and other domestic conveniences, facilities for education and recreation and the like—all available in the suburbs. Not at present, except to a few confirmed city dwellers or the many who have never realized that the suburbs and the country provide today many of the city advantages of yesterday. Increasing decentralization of factory and business will help to spread housing out from high-value areas—conversely, it will present new problems for the city tax assessor!

Conclusions

Stated briefly, there are a few logical conclusions:

1. Slum clearance is desirable but rarely affords a solution to urban low-cost housing problems. Put legislation with teeth on the statute books to get rid of the slums as unhealthy, but don't build houses or apartments for people of minimum incomes on the same high-value land when better opportunities exist elsewhere. Anyway, most slum areas need more open land for recreation.

2. If we want to provide decent housing for workers with incomes of less than $100 a month (permitting payment of less than $25 a month rent, on the average), we must accept the principle of subsidy and charge the cost of subsidy to improved health, lessened crime costs, and a fairer return for low-income workers, perhaps recapturing a considerable part over a period of years in a saving in government costs for congested residential areas. A generation of acceptance of certain minimum housing standards for the low-income group, and we'd probably accept such standards and the cost of getting them as perfectly logical and in keeping with present minimum standards of education and provision for utilities. We don't differentiate between income groups in the water we supply or the brand of schools. We can still continue experimenting to find the $1,000 house—but unless we find ways of reducing our costs of services, even a truly low-cost *house* doesn't give us the complete answer.

3. Any subsidy for low-cost housing must carry with it some public form of control over land development to stabilize reasonable values and discourage speculative excesses. (FHA is demonstrating the worth of this principle, in requiring approval of the land and its value, the layout and cost of improvements, in order to protect government loans.) Without such control, speculative orgies will occur in cities where many new homes must be built. With such control for both low-cost and medium-cost housing, certain municipal costs may be reduced.

If we're not going to stand still as a nation, something must be done about the housing situation. These are simple facts and understandable conclusions. Let's either get on with the work and do the job, or quit talking about our high standards of civilization.

Editorial Note

THE AMERICAN CITY wishes that Mr. Draper had added to his three numbered conclusions another reading about as follows:

4. One effective way to lessen the need for subsidy and to deflate excessive land prices in blighted and slum areas without reducing municipal revenues, would be to shift a substantial portion of the present real estate tax off buildings and onto land values. The larger the percentage of land values or ground rents which taxation absorbs, the lower the selling price of land tends to become. And with simultaneous reduction of taxes on buildings would come substantial lessening of the carrying charges, in taxes and interest payments, which home owners are now compelled to pay.

Backyard pumps in small communities are being rapidly replaced by the faucets of a public water supply system, reducing the risk of water-borne epidemics.

WHAT CAST IRON PIPE MEANS TO THE CHILDREN

A GLASS of pure water for a thirsty child, brought to your bathroom faucet from a mountain rill miles away, by a cast iron supply main! A play pool in a congested area of a great city on a hot day, full of happy children splashing in sparkling water, distributed by a cast iron main!

These modern successors to the moss-covered bucket and the ol' swimmin' hole may lack sentimental associations but they mean health and comfort, protection from water-borne diseases, to children. And they are made possible by cast iron supply and distribution mains in community water supply systems.

Cast iron pipe is the standard material for underground mains the world over. More than 95 per cent of the pipe in the water distribution systems of the 15 largest cities in the U. S. A. is cast iron pipe. Its useful life is more than a century; it costs least per service year and least to maintain. It is the only ferrous metal pipe, practicable for water mains, gas mains and sewer construction, which rust does not destroy. Made in diameters from 1¼ to 84 inches.

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Why not remember to mention THE AMERICAN CITY?

Forward Steps

Reported by
Municipal Officials, Chamber of Commerce Executives, and Others

Tax Savings Department a Demonstrated Success

BALTIMORE, MD.—In May, 1933, I installed in the Baltimore Bureau of Receipts what has since been known as the Tax Savings Department, so that people might pay their tax bills in installments. From the beginning of the Department up to October 25, 1937, $11,983,055.17 has been collected, and 87,663 accounts have been handled through this savings division.

Payments may be made on any bill over $10 for either current taxes or taxes in arrears, and the money is held by the City Collector until the entire bill is liquidated, at which time an entry of the full amount of the tax bill is credited upon the tax rolls.

Interest and penalty or discount are not prorated, but when one-half of the bill is paid, interest and penalty cease upon the paid portion; or if the one-half is reached during a discount period, the taxpayer receives benefit of the discount upon the amount paid.

We have no stated periods for payment and no fixed amounts. The taxpayers may deposit sums as small as $1, at such times as they find it convenient, but of course the entire bill must be settled before the limitation period.

We have found that by permitting the people to pay taxes in small installments many pieces of property have been saved from tax sale. Our people like this method of paying their taxes, and the Department has shown an increase in accounts, as well as the amount of money taken in each year.

THOMAS G. YOUNG,
Collector, Bureau of Receipts.

Hospitality to Parkers

SPOKANE, WASH.—One of the most annoying features of trading in any metropolis is the scarcity of parking space. The local merchants who provide the best parking facilities naturally get the most regular visitors. One of the best systems in the country has been devised by Spokane, and through its Hospitality Club and Merchants Parking Association this fact has been given wide publicity. At the beginning of the holiday season in 1936, the Hospitality Club came out with a half-page advertisement, full-page length, headed "Ample Parking Space in Spokane for Inland Empire Visitors." This was run in the leading newspaper, which has a wide circulation in all towns within a radius of 100 miles of Spokane. It gave a map of the city, showing the retail zone, and the congested zone outside the retail district, and stated the parking regulations in each zone. The parking spaces available in these two zones were shown—21 free and 10 pay lots, the former capable of accommodating 1,547 cars, and the latter, 639 cars. Following this was a detailed list of the lots, with the location of each, and the price, in case it was a pay lot. Readers were advised to clip the ad and retain it for reference when they visited the city. Many additional copies were run off and kept in the rooms of the Hospitality Club, where one could be obtained by any motorist desiring it.

Whenever a sizable convention meets in Spokane, the Hospitality Club runs a big ad welcoming them to the city, suggests their shopping in the Spokane stores for souvenirs or gifts for folks back home, and gives a brief summary of parking regulations, and the location of free and pay parking lots in the congested districts.

The Merchants Parking Association, composed of the leading retail merchants, maintains a number of free parking lots, available to all their patrons. One of the largest of these is under the Viaduct, two blocks from the heart of the retail district. It is two blocks long and capable of accommodating hundreds of cars. At the entrance is a stone lodge, in which is a uniformed attendant, who takes charge of the car, and issues a ticket that covers the parking fee when o.k'd by any of the stores in the Association.

WILLIAM BLISS STODDARD.

Dictating Machines a Big Help

CINCINNATI, OHIO.—I have used a dictating machine for some time and find it very convenient, especially when working on Saturday afternoons and in the evening hours. These machines serve as a good auxiliary, and they facilitate the work of the girls in the office. In some offices, it might even mean the saving of one stenographer's salary.

When work has piled up considerably, mechanical dictation helps my stenographer get through it quickly. I find it also helps me to get more work out without crowding either of us.

ROBERT E. COADY,
Supervisor of Playgrounds, City of Cincinnati, Ohio.

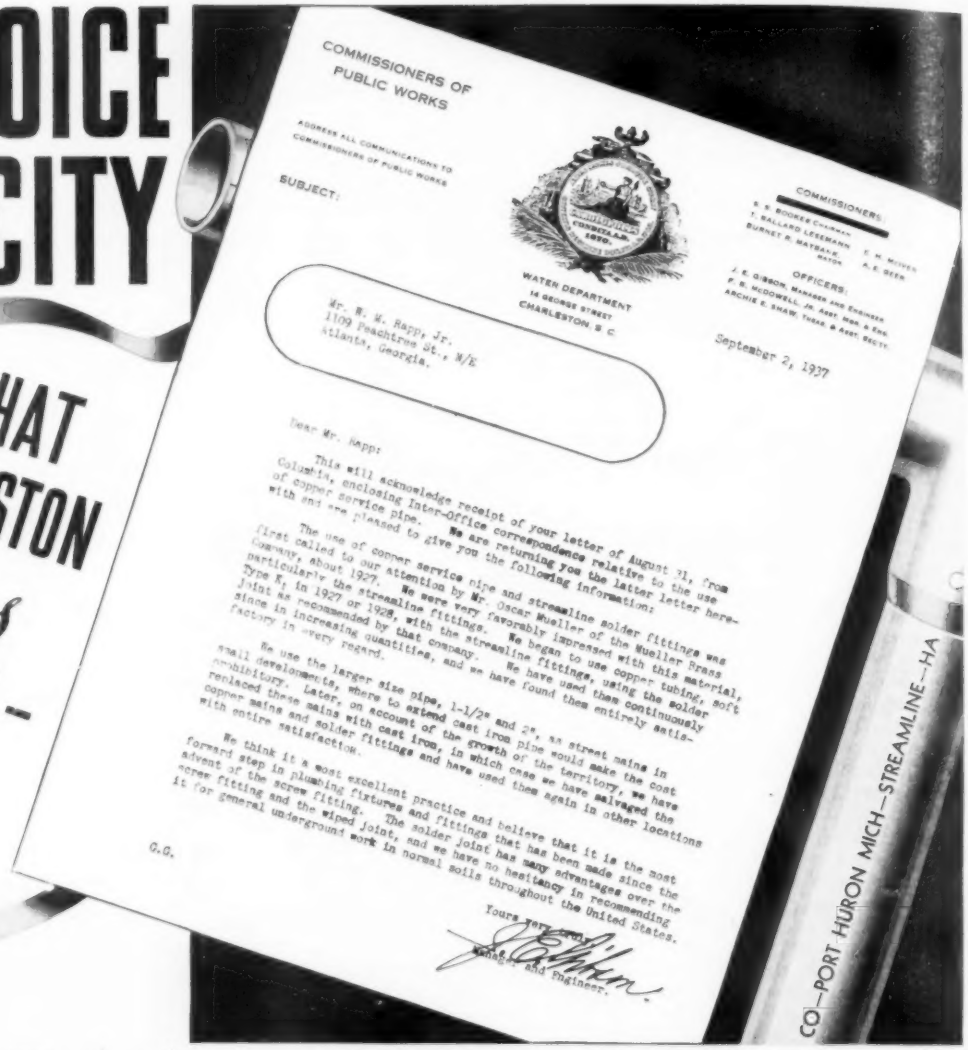
Seattle Police Machine-Dictate Their Reports

SEATTLE, WASH.—We use dictating machines so that the investigating officers and detectives may make their reports on these machines at the time of the completion of their investigation, thus avoiding the necessity of having a stenographer available for such work at all times.

These reports are typed by clerks from the records made, at convenient times or during the evening hours when business has slacked up to a certain extent. The use of these machines is an advantage in that the clerks are available to do this work after doing the regular clerical work during the busy time of the day, and thus a minimum of lost time and effort is possible. These machines have been in use in this Department for the past several years, with very good

THE VOICE OF A CITY

-WHAT CHARLESTON *Says* ABOUT -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ADDRESS ALL COMMUNICATIONS TO COMMISSIONERS OF PUBLIC WORKS
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14 GEORGE STREET
CHARLESTON, S. C.
COMMISSIONERS:
OFFICERS:
Mr. W. M. Happ, Jr.
1109 Peachtree St., N/E
Atlanta, Georgia.
September 2, 1937
Dear Mr. Happ:
This will acknowledge receipt of your letter of August 31, from Columbia, enclosing Inter-Office correspondence relative to the use of copper service pipe.
We are returning you the latter letter herewith and are pleased to give you the following information:
The use of copper service pipe and streamline solder fittings was first called to our attention by Mr. Oscar Wheller of the Wheller Brass Company, about 1927.
We were very favorably impressed with this material, particularly the streamline fittings.
We began to use copper tubing, soft Type K, in 1927 or 1928, with the streamline fittings.
We have used them continuously since in increasing quantities, and we have found them entirely satisfactory in every regard.
We use the larger size pipe, 1-1/2" and 2", on street mains in small developments, where to extend cast iron pipe would make the cost prohibitory. Later, on account of the growth of the territory, we have replaced these mains with cast iron, in which case we have salvaged the copper mains and solder fittings and have used them again in other locations with entire satisfaction.
We think it a most excellent practice and believe that it is the most forward step in plumbing fixtures and fittings that has been made since the advent of the screw fitting. The solder joint has many advantages over the screw fitting and the wiped joint, and we have no hesitancy in recommending it for general underground work in normal soils throughout the United States.
Yours very truly,
C.C.
CO—PORT HURON MICH—STREAMLINE—HA

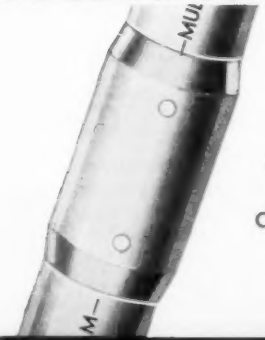
STREAMLINE COPPER PIPE AND SOLDER FITTINGS

TRADE MARK REG. U. S. PAT. OFFICE

● Mr. J. E. Gibson, Manager and Engineer, Water Department, Charleston, S. C., says "We began to use copper tubing, soft Type K, in 1927 or 1928, with the STREAMLINE Fittings, using the solder joint as recommended by that company. We have used them continuously since in increasing quantities, and we have found them entirely satisfactory in every regard"—and in addition Mr. Gibson says of the solder joint for underground use, "and we have no hesitancy in recommending it for general underground work in normal soils throughout the United States". COULD THERE BE A STRONGER RECOMMENDATION THAN THIS?

Years of service for underground work, under normal conditions of soil and water, have proved beyond doubt that STREAMLINE Copper Pipe and STREAMLINE Solder Fittings are the most modern and efficient materials on the market today for this class of work.

A STREAMLINE service line is vibration-proof—settlement of filled earth or water mains does not effect it. It is rust and clog-proof, and its joints are permanently tight. STREAMLINE is the ideal material for many applications in filtration plants; in aeration lines and in heating coils using the sludge digestion system in sewage disposal plants. When your plans call for a permanent piping installation—for any purpose, CONSIDER STREAMLINE CAREFULLY BEFORE YOU BUY.



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results.

A further advantage in the use of these machines is the fact that the records made are correct in every detail, perhaps more so than a report taken down in shorthand would be, and in the transcribing process all details can be accounted for by having the record repeated as often as necessary. After the report is typed, these records are shaved with a machine and ready for use again on the dictating machine.

WILLIAM H. SEARS,
Chief of Police.

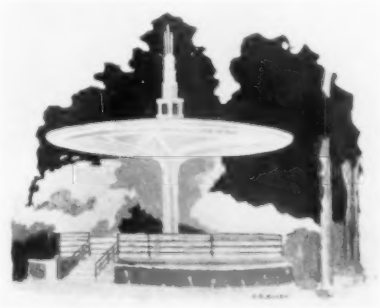
A Beautiful yet Practical Bandstand

CANTON, ILL.—This city has crashed bandstand history with one of the most beautiful fusions of architecture and engineering yet appearing in the field, a gift from a prominent citizen, U. G. Orendorff, President of the Canton District Park Band, and Mrs. Orendorff. Heretofore, bandstands that have been open to the four winds have resigned themselves to the sacrifice of the soundboard, which is the essence of the acoustical properties of the traditional band "shell." The shell type is known to throw forth the sound reflected from the enclosed back or sides and without the interruption of supporting pillars between the music and the audience. These two factors have been proved necessary to the throwing of clear, natural tones of voice and music out across a given space, and they are present in a new form in Canton's novel bandstand. The ceiling is the sounding board. Covered with a sound-absorbing material which prevents reverberations, the ceiling is so constructed that it catches the sound and throws it, not back toward its source, but outward in the direction of the listeners. The material is an inch thick and perforated throughout with holes ⅛-inch in diameter. The ceiling is high, and is designed to spread its natural sound-range in proportion to its height, up to a certain point.

The only supporting column of the bandstand is located directly in the center, which eliminates the possibility of interference with the tone quality. The bandstand has been described as a "multiple megaphone," since the sound received from any direction is increased for carrying power and thrown outward in a manner similar to that of a megaphone.

In addition to the observance of acoustic principles in the construction of the bandstand, the range of sound is widened by a modern, efficient, electrical sound system. The handsome 12-foot pinnacle above the roof contains four loudspeakers, one pointed in each direction. These reproducers are capable of developing an enormous volume, for, set at half the power, the sound carries for many blocks. On the stand itself are three movable microphones, which can be shifted to any position on the floor in order to attain the best possible results from band music, singing, or speaking. High-speed vibrations are transmitted through these velocity-type microphones to a "mixing panel," where the sounds from the three are blended until a perfect tone is reached.

The entire sound set-up is handled from the basement, where an operator sits at a control board and manipulates the connections between the microphones and the big reproducers. He is guided by a small loudspeaker called a "monitor," which has about one-tenth the volume of those upstairs. The sound system is so successful that it is almost impossible to notice any difference between the increased reproduction of the sound and the natural tone issuing from the stand below.



SKETCH OF CANTON'S BANDSTAND

Canton's bandstand is constructed to withstand a 90-mile gale. It is of steel-reinforced concrete, built over a roomy basement, with a single central column and cantilever type beams supporting a "mushroom" type roof. The basement and floor of the stand are approximately 30 feet in diameter, with the roof extending out another foot all around. The tiled floor is 3½ feet above grade, and the ceiling is 15 feet above the floor. Twelve feet above the copper-plated roof stretches a pinnacle, 4 feet in diameter, which is topped by a neon light. With the exception of the copper on the roof, all exposed metal is of solid bronze. This includes the two-band railing around the stand, the angles which support a band of colored tile around the roof, and door and window frames.

Canton has given us one more of those rare examples of the achievement of the beautiful through the simplest expression of practical function.

California Governmental Research Association

ON October 22, 1937, a conference was held at the University of California, Berkeley, Calif., to form the California Governmental Research Association. The principles of organization adopted at this meeting state that "the purpose of this Association should be to provide means for persons engaged in governmental research in California (or in the Pacific Coast States) to exchange ideas, information, and experience on problems of common interest. The Association should not pass any resolution on public issues nor should it conduct any research project." Membership is to be confined to persons engaged wholly or partially in governmental research.

Plant a Tree on Your Street

PIEDMONT, CALIF.—This city has worked out a system for the provision of street trees without any strain on its budget. Individual property owners pay for the trees, on streets being planted, and the Park Department plants and cares for the trees along with its regular work. A Street Tree Plan has been approved by the City Council, and an ordinance has recently been passed setting up the guardians of the plan, a Street Tree Committee. The Committee is composed of seven members: the Superintendent of Parks, the Superintendent of Streets, a City Council member and four other appointees of the City Council. It must have at least one regular meeting per month and concern itself with the following duties:

1. The determination of matters affecting the planting, maintenance and removal of all trees and shrubs within street and other public rights-of-way within the city.
2. The recommendation of specifications for the planting, maintenance and removal of trees and shrubs, for adoption by the City Council.
3. The promotion of public interest in and understanding of the street tree plan.
4. The recommendation of means for effectuating the plan to the City Council, and the securing of citizen cooperation to this end.
5. The recommendation to the City Council of any changes, amendments or extensions in and to the street tree plan which the Committee may deem to be advisable.
6. The holding of public hearings on any of the foregoing matters when it seems advisable.

Any person, firm or corporation interested in planting or removing a tree or shrub on any street or other public right-of-way in the city of Piedmont must go to this committee for a permit. After the proposal is studied by the committee, the permit is issued, or not, in accordance with the street tree plan, stating the kind and size of the tree or shrub to be planted or removed, the exact location, and other specifications for planting, maintenance or removal included in the plan. Then the planting or removal must be carried out at the expense of the holder of the permit, unless the City Council agrees in certain cases to bear the cost of removals recommended in the street tree plan or of removals necessary to the public safety.

Piedmont's ordinance also contains provisions stating that it is unlawful to injure or destroy, or trim or prune a street tree in any way, and it is also unlawful to affix any mark or poster or advertisement to a tree or shrub. Any violation of the provisions of the ordinance are punishable by a fine of $200 or 60 days imprisonment or both.

Copies of the ordinance may be obtained by applying to the Secretary of the Street Tree Committee, Mrs. Thomas M. Potter, 207 Pacific Avenue, Piedmont, Calif.

E. L. ANDERSON,
Chairman, Street Tree Committee.

No Half-way Measures
THAT ONLY LOOK LIKE SAVINGS . . .

F-M PUMPS MODERNIZE WATERWORKS AT WYANDOTTE, MICH.

● The courage to discard pumping equipment that was still perfectly usable resulted in big savings at Wyandotte, Mich. The old steam-driven pumps were costing too much for operation as compared with modern equipment. Alert, the city officials decided to start over with an entirely new plant. Merely adding new equipment to the old would be perpetuating inefficiency.

A Fairbanks-Morse 2.6 m.g.d. motorized pumping unit and an F-M 2.2 m.g.d. pump, driven by an F-M 125-hp. motor, were installed in a new building.

Wyandotte is only one of the many cities, large and small, which have modernized with F-M pumps—pumps so efficient that they soon save their cost, and then begin reducing taxes.

For information on F-M pumping equipment designed for municipal use, write for Bulletin 5810-1. Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Ill. 34 branches at your service throughout the United States.

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Supplementing Zoning Boundaries with Neutral Strips and Monuments

WITH the present urgent need for re-studying in most American cities the zoning ordinances drafted to a large extent some ten or fifteen years ago, come the problems of how to make these ordinances more effective. The past years of depression have resulted too generally in a sad breakdown in the effectiveness of these ordinances, to a point that the worth of this method of protecting values in the city is being seriously questioned. Amendments, revisions and exceptions have in many instances come with such ease and rapidity that the original ordinance is all but obscured. Most of the changes are piecemeal, and practically no attempt has been made to make any fundamental alterations. It is rather remarkable that American communities, with so much industrial and commercial progress going on within their confines, can go blithely along without ever thinking of looking at, not to mention overhauling, the machinery of their antiquated zoning ordinances. There is apparently little embarrassment at having a "Model T Car" in their legal household equipment. Small wonder at constantly recurring repairs.

Along with this problem of re-zoning and constant re-study of the city plans and policies to guide future growth, is that of so dramatizing these ordinances that the concept will be grasped by all citizens.

Neutral strips of parkway, open spaces, and similar devices, are effective in delineating areas, and in preventing encroachment of one type of development on another. This method, however, is not always feasible nor, in some cases, desirable. It is often not attainable and is expensive.

Where this means of segregation is not practical, a method of boundary delineation used by the Federal Government of placing monuments along the line of its limits may be effective. Monuments defining the limits of city zones would necessarily be smaller. Varying conditions would require different types of markers —large, small, raised or flush with the ground.

The posting of zones with markers such as used along highways or at stop streets would focus citizen attention upon the planning and zoning problems of the community and would enlist interest in these phases of public administration. It would also simplify the job for officials.

What do the readers of THE AMERICAN CITY think of this suggestion?

J. MARTIN FRISSEL,
Planning Technician, Michigan State Planning Commission, Lansing.

Exhibit Showed How Fires Are Started

COLUMBUS, OHIO.—This is how one city publicized fire prevention during the week of October 4. A big building on the main street had windows with big red "flames" in them. In front on the street were several big red fire-trucks and their equipment. On the pavement were uniformed police directing the crowd to stop and visit the exhibit.

Inside, the exhibit consisted of big, well-lighted booths all around the walls of the room, each separate one presenting a complete and vivid illustration of a cause of fire. There was the iron left burning, with a hole clear through the ironing board; the cigarette, waste basket and curtain trio; the oiled mop in the dark corner; a woman sleeping in bed, dropping cigarettes on the rug; and many other familiar scenes. Plenty of police were at hand to provide explanations.

In front, too, was Mrs. O'Leary's red cow of Chicago fire fame.

A. K. KENNEY.

Traffic Authority in Pennsylvania

THE Commonwealth of Pennsylvania has established a new Division of Traffic Engineering in the Department of Highways, to have authority over all traffic signs, signals and markings in the Commonwealth, including those erected in cities and boroughs.

Ross H. Boas is in charge as Traffic Engineer. William S. Canning, Engineering Director of the Keystone Automobile Club, has been retained as consulting engineer.

An Economic Brake on Excess Land Development

TO the Editor of THE AMERICAN CITY:

I was interested in Henry S. Churchill's article, "Small Town Planning for the Future," in the October issue of THE AMERICAN CITY, in which he makes reference to speculation in land in the coming boom in real estate.

In 1914, at my request, this city set down a ruling in which it was declared that no allotments would be accepted in our city which did not have the sewer, water, sidewalks and grading of the street in and paid for by the allotter.

The reason for this regulation was that a building lot was not what its name indicated, unless there was water on the premises and the sewers received waste water and drainage on the street, and unless there was a place to walk and a place to drive.

This regulation met with vigorous protests from the allotment companies, because at that time, we were just entering a boom in real estate, which resulted, in the course of a few years, in house building at the rate of $1,000,000 a month, and this continued for a period of almost two years.

The net result of this regulation has been that land has been developed by allotments in accordance with the economic demands for building sites, and no faster, because the allotters hesitated to make the investment in these utilities at their own expense unless and until there was a reasonable immediate demand for building sites.

In addition to that, the city was not burdened with a special assessment debt for bonds to build these works for which the full faith, revenue and credit was pledged for the redemption of bonds at maturity, in the event that the special assessment tax was not paid by the benefited property owners. During the depression many cities in this state were practically bankrupt, due to their inability to meet their bond obligations for special assessments.

A third benefit which resulted was that the city obtained practically all of its secondary water and sewer system at the expense of the benefited land without obligating itself in the matter of the issuance of bonds. This reduction in possible debt amounted to approximately three million dollars. The plans and specifications were subject to check by the Engineering Department, and the work of installation was under city inspection paid for by the allotter.

I am calling this to your attention, because I believe that if this ruling were adopted generally it would afford an economic brake on land speculation in the over-development in newer sections of the city, and would make a substantial contribution to the municipalities by providing an increase in their bond-issuing powers for general purposes for the benefit of the entire community.

In the county of Cuyahoga (in which is located the city of Cleveland and numerous suburbs, including Lakewood) there are now 244,000 vacant lots, sufficient for a population of another million people, or enough to nearly double the present population. Obviously, this is greatly in excess of the needs of this territory, and this non-productive land, withdrawn from farm production and listed on the tax duplicate at higher than farm values, is presenting a serious problem in the matter of tax collection and is loading the sheriff's office with sales of land for non-payment of taxes.

This very unhealthful condition could have been obviated by the exercise of the simple regulation quoted above.

E. A. FISHER,
City Engineer, Lakewood, Ohio.

TO ALL OF OUR MANY FRIENDS IN THE WATER FIELD

Greetings . . .

AS another year is approaching to its close, we soon will hear again the beautiful age-old message of "Peace on Earth, Good Will Toward Men." In the world of today, we can all earnestly hope that such sentiments will remain in the hearts and minds of all peoples.

May we express to you our grateful thanks for your kindly consideration and cooperation in our efforts to be of service; also for the many friendships that we are privileged to enjoy amongst you.

That your troubles be small, and your blessings large, is our heartfelt desire, in wishing you a Happy Christmas Tide and a New Year filled with good health and prosperity.

J. E. Branch
Sales Manager

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Mention THE AMERICAN CITY—it helps.

Letters to the Editor

R. J. Benzel Comments on Efficient Parking Meters

To the Editor of THE AMERICAN CITY:

We have read the letter by Lewis R. Greene on page 107 of your November issue, headed "Westerly, R. I., Comments on Parking Meters." He presents the case for the manually operated meter, which we were the first to put on the market. Inasmuch as we were also the first to produce an automatic parking meter, we should like to give your readers the facts about this meter. In the automatic, it is the coin and not a handle that actuates the mechanism.

Our first two installations of automatic meters were made in Dallas and in Fort Worth, Texas, early in 1936, and consisted of 500 and 950 meters respectively. In addition, we have sold automatic parking meters to the following cities: Kansas City, Meadville, San Antonio, Lubbock, Toledo, Long Beach, Clearwater, Ponca City, Oklahoma City, El Paso, Providence, Norfolk, Knoxville, Bakersfield, Uniontown, Atlantic City, Wilmington, Abilene, Sharon and Topeka.

Our meters have experienced all kinds of weather exposure—hot, cold, moist and salt air.

First, regarding service calls on our earliest type of meter, manually operated of course, the 5,130 adjustments per month are for some 200,000 operations of these 1,000 old-style meters in Dallas. Failures thus amount to 2.5 per cent, or successful operation is, roughly, 97.5 per cent. Later we designed our automatic meter, and the 500 of these in Dallas with their 715 adjustments in 100,000 operations mean a successful operation of 99.3 per cent. Our most recent installation of 500 automatic meters in Atlantic City averaged ten service calls during the first five weeks to November 1, or 99.9 trouble-free.

Mr. Greene submits five points against automatic meters and consequently in favor of the manually operated meters in Westerly, viz.:

1. Consider the time required to keep automatic meters wound up.
2. Automatic meters run down unevenly.
3. The winder may forget to wind some of them, with consequent loss of revenue to the city and confusion to the motorist.
4. Manual meters are simpler and more rugged, as consider the manually operated vending machines and revolvers.
5. Exposure to all kinds of weather and abuse calls for the simplest practical mechanism, which is in the manual meter.

We answer these charges as follows:

1. In some cities the mechanic when checking the meters each day has also the responsibility of winding them, as for instance in Long Beach and Bakersfield, Calif., where 100 are covered per hour. Our automatic meter mechanism cuts off at the end of each service or parking period. For two-hour parking, the meter will run approximately seven days without rewinding; for one-hour parking, about five days. Therefore the meter will run practically a week with one winding; but the city government does not permit money to accumulate for more than one or two days, and usually makes collections every other day and at that time winds the meter, rewinding about 60 or more meters per hour.

2. Of more than 11,000 automatic meters installed, we have no complaint or criticism of meters running down before the mechanic or collector rewound them.

3. Although these automatic meters operate hundreds of thousands of times per month, we have no complaints of failure to operate due to the clock's running down. On the other hand, with the hand-operated meter it was observed that many persons intentionally or otherwise failed to turn the handle. If each of 1,000 meters had one dormant nickel period per day, the city would lose in the neighborhood of $15,000 per year, and 300,000 persons might be deprived of the privilege of parking in the district. One of the reasons we changed from hand-operated to automatic meter was to avoid confusing the motorists. While the public can read instructions, it frequently does not follow them. People put in their nickel, but did not always turn the handle, and before giving a ticket the officer must turn the handle. Two cities have replaced our hand-operated meter with the automatic, on the existing posts, resulting in an increase of 10 per cent in revenues.

4. To say today that a simple meter is necessarily the best shows inexperience, for meters must be built to meet the requirements of outdoor usage; for instance, our automatic meters have withstood test temperatures from 30 degrees below to 170 degrees above. Any equipment to which the general public has access and with which people can tamper will require more frequent adjustments and corrections than one free from such manipulation. Our hand-type meter was rugged, but boys would flip the handle and adults would fail to turn it. To overcome this problem we developed our automatic meter, which has even more sturdy qualities and, having no handles, cannot be manipulated by the public. We have sold more automatic meters than all other makes combined and are having less than one-tenth the trouble experienced with the hand-operated type. Women object to the handle meter because it is likely to soil their gloves. Many hand-operated meters can be stopped on "dead center" showing "legal parking" for all day or until someone turns the handle to a full stop. This is completely overcome in the automatic meter. The remarks regarding vending machines scarcely apply to parking meters. A vending machine is not a meter, not a timing device, not a clock mechanism, and is less costly to build "hand-operated" than "automatic."

5. The success we have attained in building a durable meter is illustrated by two instances. At Long Beach, Calif., a mechanism that had fallen into a flood-control ditch filled with salt water was retrieved after two months, and when a nickel was inserted the meter operated. At Toledo, Ohio, a stolen meter head was found by some boys in a river-bed. The blow that had removed the meter from its post had broken the center wheel, and with the addition of only a new center wheel the meter operated.

R. J. BENZEL,
President, Dual Parking Meter Co.,
Oklahoma City.

Non-Political Service for Municipalities

To the Editor of THE AMERICAN CITY:

Your article on "National Politics and Local Elections" in your issue of October, 1937, page 89, attracted my attention quite strongly, as we in Battle Creek do not suffer in local matters like most places, especially the larger ones. We have a population of about 50,000. In the matter of city elections, appointment of city officers and other employees, very little of Federal or state politics enters, or has much if any weight, although there is some local influence shown.

I do not know of any city of our size or larger where city officials could hold a position long. I have been in the employ of our city for nearly 51½ years as head of a department, and the original water and sewerage systems were built and operated under my supervision. Many other of our city officers have been in city employ for 15 to 30 years. The head of the Fire Department has been in city employ for a little longer than myself, but has not been head of a department quite as long. National politics, as worked in most cities, would have put us out long ago, even if long previous experience, like mine in engineering, entered into the problem.

My experience covers over sixty years, four years as City Engineer of Erie, Pa., fifty-one here and six or seven in railroad work. Our water works is rated at a cost of two million dollars, was built in 1887, and has owed no debt for twenty years. We have saved a million dollars in interest by paying off the debt so long ago; and by the construction of suitable mains, pumping stations, etc., at the right time, half as much more.

W. W. BRIGDEN,
Superintendent and Engineer, Water Department.

Battle Creek, Mich.
October 14, 1937.

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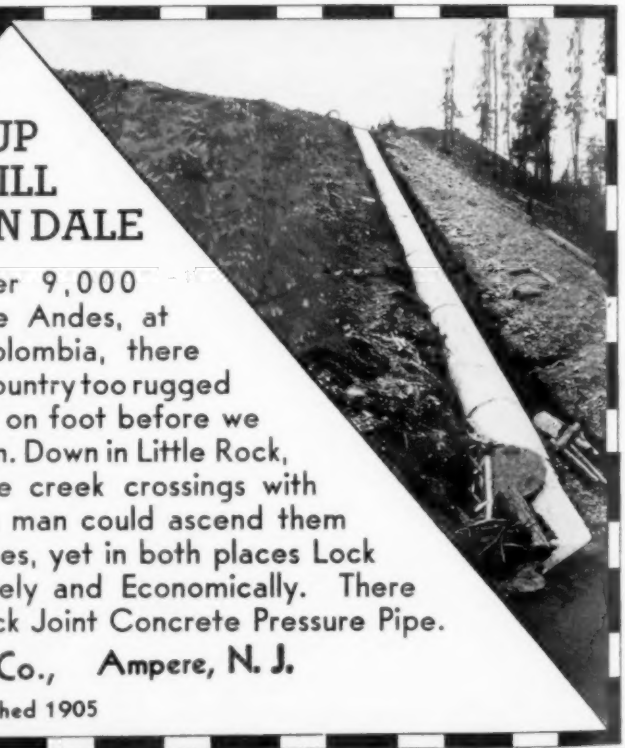

UP
HILL
DOWN DALE

UP over 9,000 feet in the Andes, at Bogota, Colombia, there were miles of country too rugged even to traverse on foot before we started construction. Down in Little Rock, Arkansas, there were creek crossings with grades so steep that a man could ascend them only on his hands and knees, yet in both places Lock Joint Pipe was installed Safely and Economically. There is no country too rough for Lock Joint Concrete Pressure Pipe.

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Traffic Control and Facilitation

Conducted by Publications Committee, Institute of Traffic Engineers, 1 Park Ave., New York
Paul L. Green, Chairman; John T. Gibala, Vice-Chairman; William C. Brandes, Otto K. Jelinik, Burton W. Marsh, William R. McConochie, E. J. McIlraith, Donald M. McNeil, D. Grant Mickle, Robert A. Mitchell, P. Taylor, Reyburn Hoffmann

Mr. Coach Rider Finds a Champion

A Platform for the Coming City Traffic Revolution

By ROSS SCHRAM
Vice-President, Twin Coach Co., Kent, Ohio

As one who is thoroughly familiar with about every urban transit property in the country in cities over 100,000 population; one who long heard traffic and transportation complaints as Secretary to Mayor James Couzens of Detroit, and who once was responsible for the operation of 2,000 pieces of public transportation equipment every 24 hours through the streets of Detroit, as General Manager of the city's Department of Street Railways, I'll herewith risk the chance of being called a propagandist for Mr. Rider on the City Common Carriers of America.

I FIRMLY believe that the first step in the solution or amelioration of the present situation in the streets is a Traffic Revolution by patrons of common carriers. Their rights, dramatically and properly presented, by some smart politician, will bring on this Revolution, over night, in some forthcoming hot municipal campaign.

Most folks do not know how greatly disproportionate is the percentage of persons traveling in the street in private cars and in public-carrier vehicles. Only one in six people in cities of over 100,000 owns an auto. An authentic check which was arranged between 8 and 10 A.M. and 4 and 6 P.M. on September 9, near the intersection of Woodward Avenue and Verner Highway, in Detroit, showed a total of morning in-bound and evening out-bound traffic as follows:

Private autos	3,950
Buses	229
Street cars	131

Of course, the autos did not average two persons per car, but we will give them the benefit of the doubt. Therefore, we grant they carried 7,900 people.

The small-sized buses in use there averaged, conservatively, 35 persons per vehicle, or 8,015, and the street cars 100 persons, or 13,100, making a comparison of 21,115 people riding in 360 public vehicles against 7,900 people riding in 3,950 autos.

Whereas Mr. Common Carrier Rider and his family used to hurry to work and home to dinner on a double-track street-car line occupying a width of 18 feet in the center of the street, more and more of them are now traveling by motor-bus or trolley coach. In fact, the 1936 increase in motor-bus passengers was 27 per cent. Whereas trolley-car riders increased 1½ per cent, trolley-coach riders leaped 40 per cent.

Mr. Common Carrier Rider, his wife and children, now get their transportation at the curb. These 25,000 urban buses, the more modern of which, including electric trolley coaches, have accelerations of three to four miles per hour per second, poke their noses into the curb-loading stops, decelerated by the best brakes in the world—then shoot back into the free-moving traffic near the center of the street, much as a fast half-back looks for a hole, puts his head down, and crashes through.

For a block behind, there is a jam and a breaking of high-strung nerves of every automobile driver, as the public-carrier coach straightens out. With a "damn" on their lips, these private-car drivers endeavor to swing around it. A year or two ago it wasn't so difficult, *but what the automobile public doesn't realize is the increased speed and power of city coaches.* There is a race to the intersection. The driver of the coach has a schedule to make. It is his business. He tries to be punctual. The supervisors on the line check him. The driver of the private automobile has no schedule other than his own whim and the condition of his nervous system. At the intersection, he swings for a turn in front of the motor-bus. The bus driver is intent on watching the overhead light signal. It is his business. The private-car driver is thinking of personal affairs; driving by instinct, his wits not fully alert as those of the bus drivers are.

This is the situation that causes a large percentage of accidents at intersections. Drivers who drive by subconscious instinct should be placed in segregated lanes. It would be a protection for themselves and all others in the streets. The records are piling up rapidly, owing to the increased speed of coaches and the miserable regulation of parking, to show that accidents in the middle of the block between coach and automobile, either passing or backing out from a parking space, will soon rival those at intersections. Lane segregation of traffic seems inevitable.

Whereas the all-electric railway line in most cities had an average speed of 9 or 10 miles an hour, the motor-coach lines are now offering a speed of 12 to 14 miles an hour. Mr. Private Car Owner find it increasingly harder to run circles around the new buses. He will soon find that fighting them is like bumping a fat man at the baseball gate.

I can remember when James Couzens was the millionaire Mayor of Detroit, new to office, and kept a pad on his steering wheel as he went to and from business. He believed 20 miles an hour during the rush hour for private-car drivers was sensible and practical. He took the license numbers of those whom he saw exceeding this, and at his office wrote them letters of persuasion and otherwise. This was in 1919, and today even a man of his prestige as Mayor would be laughed at in the rush hour maelstrom if he were traveling no faster than 35 or 40 miles an hour. The difference in distance traveled in a half-second where the greatest speed of the traffic stream is 20 to 25 miles an hour against the distance where the traffic's rate is 35 to 40 miles an hour, is 11 feet!

Lane traffic segregation is inevitable at some speed. Don't you think we have now reached that speed?

Take an elevator trip to the top of a high building in any one of our representative American cities, and see this Pageant of Asininity with your own eyes. I'm serious about this. Every council-

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Operate easily, are well lapped and have ample seal around parts in plugs to withstand pressure.

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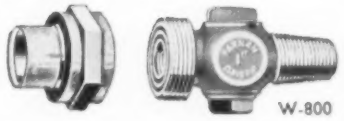

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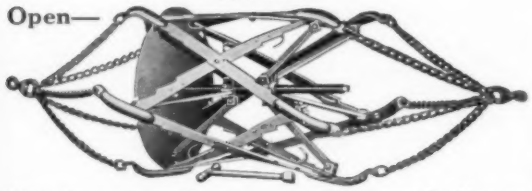

Will clean the entire sewer wall, top, and sides as well as the bottom, cutting and removing the roots and caked sediment.

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6. 4 removable sediment discs which can be placed in either end, forming 4 sizes of buckets.
7. Only one machine required for entire sewer system.

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SAFETOP FIRE HYDRANTS

Extra large standpipes; simple, straight-line operating mechanism; smooth elbow and nozzle curves; specially long-wearing valve and gasket materials; flood-proof and frost-proof. The Patented Safety Breakable Section permits speedy, economical repairs if broken in a smashing collision.

NEWTYPE WATER GATES

Built to A.W.W.A. Specifications. All parts amply strong, with simple, positive and dependable operating mechanism. Built in sizes up to 60 in. and for manual, gear, electric motor, or hydraulic cylinder control.

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MH VALVES

Double disc—parallel seat
Recommended for working pressure up to and including 175 pounds

Extra heavy—extra strong—extra safe
Highest Grade Materials
Finest Workmanship

BOOKLET

M. & H. VALVE & FITTINGS CO.
ANNISTON, ALA.

Fig. 67 A.W.W.A.

CENTRIFUGAL PUMPS
Rotary Jet Condensers and Vacuum Pumps; Evaporators, single and Multiple effect

Manistee single-stage Double-suction pumps, 75-20,000 g.p.m. capacity
Manistee multi-stage pumps, 50-3500 g.p.m. capacity with heads up to 1600 feet

Write for Bulletins

MANISTEE IRON WORKS CO.
MANISTEE MICHIGAN

man should have to do it once a month.

If, as the records show, only one person in six in cities over 100,000 population owns an automobile, why not a Common Carrier Rider Revolution?

WHAT WOULD BE THE PLATFORM? Here it is:

The elimination of parking on all public-carrier streets during the 2- to 2½-hour morning and evening rush periods, and the *assignment of the in-bound or out-bound lane adjacent to the curb solely to public-carrier vehicles.*

With the above segregation, compulsory far-side stops for public-carrier vehicles.

The benefits to accrue are:

A. Increased speed rivaling New York underground rapid transit, which indeed averages only 15 to 16 miles an hour.

B. No hazard from parked cars turning or backing into oncoming rush-hour traffic.

C. Fewer collisions with rear ends of coaches by oncoming, poorly-braked automobiles.

D. Drastic reduction in the hazard of collision at the intersection by right- or left-hand-turning automobiles wth motor coaches. Traffic KNOWS where the bus will be.

E. Higher safety record for every coach driver through halving his area of vigilance.

G. Cutting in half the side-wipe hazard, and shortening the ride to and from work for the greatest number.

Chew It Over

Here is the sweetest program one can imagine in municipal politics. Some group with acumen is going to make a major political issue out of the rights of Mr. Common Carrier Rider. On Safety Councils we need more men who have to ride public carriers and who know what it means to raise car or bus fare for a big family each week.

Here and there, Hades will pop, and in many cases the downtown property-owners association will yell curb rights; those who know how people get to and from downtown stores, know that what faciltates the trip is good also for the merchants.

The Rush Hour!

With pleasure and lively expectation THE AMERICAN CITY offers Mr. Schram's proposal for a Traffic Revolution in the interests of the riders of mass-transportation vehicles. Opposing arguments and opposition viewpoints are cordially invited by THE AMERICAN CITY.

Reasonable Immunity for Good Drivers

By O. W. WILSON
Chief of Police, Wichita, Kans.

TO influence people to drive more carefully, communities must align group pressure in favor of observance of traffic regulations. The group must favor good driving manners; it must frown on recklessness and carelessness. This group pressure cannot be aligned by force, by threats, by fines, by jail. It must be directed in some other way.

With this in mind, the Wichita Police Department in 1931 instituted a system of warning tickets which was used in lieu of notices of arrest except in the more aggravated cases. These written warnings were placed in a driver file as a part of the complete driving history.

Because of the excellent results under this relatively non-punitive enforcement system, a radical traffic-control plan was inaugurated in 1937. Arrests for violations were forbidden (even in cases of flagrant violation) except under two conditions: (1) when the offender had been drinking, regardless of the degree of intoxication; and (2) when the violation resulted in an accident.

The motorist was not permitted entirely unlimited privilege of violation, however. On receipt of a second warning within twelve months, he was called into the traffic-driver clinic for an interview. Further warnings resulted in the issuance of warrants. Accident and drinking violations are prosecuted vigorously, and each new warning means prosecution. A twelve-month period free of violations clears the slate, and safe driver privileges are again accorded.

Fatalities have been cut in half this year, though injury accidents are about the same as a year ago.

The conclusion was reached that the plan of warnings was appealing to the group sense of decency more effectively than any system of punishment. The police, by giving liberal privileges to the good drivers and prosecuting those who demonstrated their lack of consideration for the safety of others, were providing a highly selective system of enforcement which appeals to the average driver's sense of fair play.

Since this procedure was appealing to the group, and the development of some group pressure was apparent, the WARNING ticket has been replaced by a REQUEST, as reproduced here.

The influence of this new approach is being watched with interest. Time alone will tell if it decreases the accident rate.

REQUEST

Name _____
Res. Add. _____
Bus. Add. _____
Operator's—Chauffeur's Lic. _____
Make _____ Lic. _____
Owner's Name _____
Owner's Address _____
Violation _____
_____
Location _____
Date _____ Time _____
Signature _____

You may never have an accident yourself, but you play an important part in preventing them. Many people follow your example because they regard you highly. Are you setting a GOOD example?

Disregard of traffic regulations leads to accidents. You are interested in saving lives! Won't you help us make Wichita streets safer by being a model driver?

This violation is being recorded. The action taken will be determined by your previous driving record. Your signature is for identification and is not an admission of guilt.

Officer _____
Wichita Police

"THE SQUARE DEAL DEPARTMENT"

WPD 12H 9-37 30M

After Power Failure, Signals Flash Until Retimed

EXTREMELY reliable electrical service which modern utility plants deliver, together with perfected development of synchronous motor traffic signal controllers, has lessened the need for interconnecting cable in progressive signal systems. True, flexibility is thus reduced, but on certain streets outside of downtown areas remote cycle change or other central-point controlling features are relatively unimportant. In Chicago almost 100 intersections, many on heavily traveled thoroughfares, are operating interrelatedly only by virtue of motors running in synchronism with the power supply.

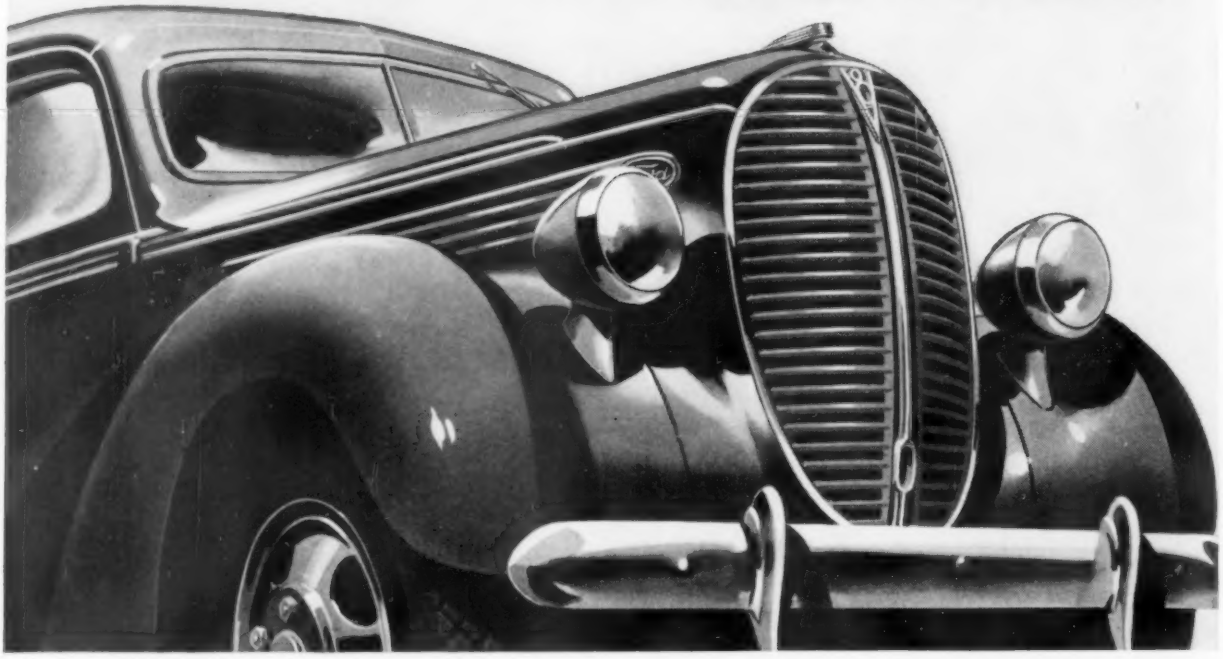
However, by rather unique specifications the city of Chicago is assured of proper operation of its signal systems in the few instances of power failure. If an interruption of power occurs at any point and the motor stops, it will resume operation upon restoration of power, but instead of restoring normal red, yellow and green signal indications, which obviously will be out of step with the rest of the system, the signal lights will be fed through a flasher circuit showing flashing yellow or flashing red as the signal lights may be wired. Such flashing indications as a substitute regulation will sustain until the case is reported and a maintenance man places the control in proper time relation in the system. Instead of signals being out of step for an indefinite period of time, the police department is enabled immediately to report any intersection which might otherwise interrupt the smooth flow of traffic.

This power failure flashing feature is provided by means of two identical two-pole, double-throw relays. Both relays are normally energized, but after interruption of power they must be re-energized manually. Thus by a relatively simple arrangement progressive flow of traffic is maintained to a high degree without the heavy expen e of cable.

W. C. BRANDES,
Traffic Signal Engineer, City of Chicago.

ANNOUNCING THE 1938 LINE OF FORD V-8 TRUCKS

INCLUDING A NEW *One-Tonner*



FORD OFFERS WIDE RANGE. FAMOUS V-8 ENGINE BRINGS NEW ECONOMY TO LOADS IN ONE-TON RANGE

THE Ford Motor Company has built more than four million trucks. With this great background of experience, it means something to say that the 1938 Ford V-8 Trucks are the finest Ford has ever built.

Here is the widest range of types and sizes in all Ford history. The big 134-inch and 157-inch wheelbase Ford V-8 Trucks are designed to do the work of heavier, more expensive units—and do it faster, at lower cost. An entirely new line of 122-inch wheelbase one-ton trucks has been added to bridge the gap between the larger trucks and the new 112-inch wheelbase commercial cars. For practically every hauling and delivery requirement there is now a unit that gives the high Ford standard of dependability and economy!

The 1938 line of trucks and commercial cars are all newly styled. They have an impressive new front end, a sturdy new grille, new headlamps, massive full-skirted fenders. Their smart, modern appearance is a definite asset to any business.

Other important advances for 1938 are a new 134-inch wheelbase in the big truck line . . . a new frame width for both the 134-inch and 157-inch wheelbase units . . . 7.50—20 dual tire and wheel equipment available at extra cost . . . improved brakes and easier steering . . . stronger construction in vital parts.

The new one-tonners and the commercial cars offer a choice of the 85 or 60 horsepower V-8 engine.

Your Ford dealer invites you to see the new line—and to make an "on-the-job" test with your loads and your driver.

LOW FIRST COST IS ONLY THE START OF FORD ECONOMY

FORD'S SEVENTH YEAR OF V-8 SUCCESS

Improving Municipal Administration

Current Items from the Public Administration Clearing House

Survey Shows Varied Results in Elections on Governmental Matters

THE scattered November elections, used by commentators primarily to do a little crystal-gazing into the future political scene, furnish material also for forecasters in public administration. Success was divided on modernizing the mechanics of government as proposed in several local issues in the 1937 elections, a check by the Governmental Research Association has revealed.

A decided victory for the merit system was recorded in New Jersey, where, by a vote of more than three to one, eleven cities and one county placed their municipal employees under civil service. Widest referendum on the question since the New Jersey local option civil service law was passed in 1908, its results more than double the number of municipalities for which the State Civil Service Commission conducts civil service examinations and provides other technical personnel services.

In New York State, where interest centered on New York City and its first proportional representation vote under its new charter, smaller communities voted on governmental revisions as follows: Westchester County approved a new charter providing for an elected executive head for the heretofore "headless" county government; Nassau County, under a similar charter, elected its first county executive, who will take office January 1, 1938; all four of the communities in the state voting on the council-manager plan of government (Erie and Schenectady Counties, cities of Yonkers and Elmsford) failed to adopt it, although in Yonkers and Erie County adoption was defeated by a narrow margin.

The terms of New York's governor, lieutenant-governor, comptroller and attorney-general will hereafter be four years instead of two, as a result of constitutional amendments approved by voters November 2. The terms of state assemblymen were also lengthened from one year to two.

Pennsylvanians voted down a city-county consolidation measure for Philadelphia. Also defeated were amendments to permit the classification of property for taxation and a state income tax and the removal of the time-lock clause which would have made easier the amendment of the Pennsylvania constitution.

Kentucky's city-county reorganization proposal, designed for trial first in Louisville and Jefferson County, was defeated.

Bond issues and tax levies for special purposes figured in many of the local elections. San Franciscans, faced with proposals for nearly $55,000,000 in bond issues, turned down the biggest one—$49,250,000 for a rapid-transit subway; but approved a $2,850,000 issue for airport improvements and a $1,600,000 issue for remodeling municipal hospitals. In Ohio, which has a low over-all property tax rate limitation, voters of a number of cities were asked to approve tax rates in excess of the constitutional limit for relief and other purposes. Opposition to increasing property taxes was registered in a majority of the cases. Columbus, following defeat of a 2.4-mill levy to provide $840,000 for the next two years' operation of city government, now faces curtailment of essential city services. Cleveland city coffers will be shy $10,000,000 in 1938 by defeat of a 9.7-mill levy November 2. Dayton, Ohio, defeated a proposed levy to finance improvements on its airport and to purchase needed fire-fighting equipment.

Governmental Facts on Small Cities Revealed

GOVERNMENTAL facts on the small city, whose importance is generally obscured by more pretentious municipal neighbors, are brought to light in a report just issued by the International City Managers' Association. The survey of 80 council-manager cities with populations under 5,000 shows that:

Nine of the cities report they are completely debt-free. Of the other cities, 2 are not in debt on general obligation bonds, 52 of them have no special assessment debt, and 44 are paying what debt they have on a long-term funded basis. The nine cities with clear financial consciences are: Anoka, Minn.; Crystal Falls, Mich.; Devol, Okla.; Marianna, Ark.; Mt. Pleasant, Iowa; Stambaugh, Mich.; Temiskaming, Quebec; Toccoa, Ga.; and West Liberty, Iowa. The cities with general funded debt record obligations ranging from $1,000 to $1,000,000.

Comparison of the number of employees for these small cities means little, the report points out, since some of them, of village size, can perform their limited services with a staff of three, while a winter resort town in the same population class requires over a hundred employees. In most of the cities reporting, however, the manager has a number of titles because he functions more as an operator than as an administrator. In Baileyville, Maine, for example, he is chief of police, overseer of the poor, road commissioner and tax collector; in Upland, Calif., he is city engineer, street superintendent, building superintendent, electrical inspector, plumbing inspector, budget officer, water superintendent, park superintendent and purchasing agent. These positions are frequently set up in the charter, with provision that they may be held by the city manager until there is sufficient work to justify appointing additional personnel.

Fifty-eight of the cities reporting own and operate their own water works; and 17 own electric light plants; 21 have electric distribution systems; 9 have airports; 6 own gas distribution systems plants; 1, a water distribution system; and 1, port facilities. Thirteen of the cities do not own or operate any utilities. Some of these cities gain profit on these utilities for their general fund. Anoka, Minn., one of the debtless communities, applied $84,500 from such utility revenue to 1936 expenditures.

Most of the 80 cities have councils with five members, chosen for an average term of about three years. Terms of councilmen overlap in 53 cities. In 25 others, all council positions come up for election on the same date. In nearly half the 80 cities voters elect no other officers than councilmen and school board members. Cities that do vote on other officers most commonly elect the finance officer—treasurer, auditor or tax collector. The city clerk is elected in 17 of the cities.

Police Departments Install Crime Prevention Programs

CRIME prevention, with emphasis on juvenile attention, is playing an increasingly important part in city police programs, according to reports received by the International Association of Chiefs of Police. During the past few months two municipalities—Richmond, Va., and El Paso County, Texas—have begun operation of crime prevention programs, and Salt Lake City is contemplating a plan for reducing juvenile delinquency.

Richmond's new Crime Prevention Bureau, established last month, has a personnel of four, including two policewomen. For the time being, the Bureau will concentrate on problem children, with investigation of all juveniles who figure in arrests as either principals or witnesses.

El Paso County, Texas, is approaching the problem in a different manner, with inauguration of a ten-lesson "course" for high-school boys that includes special training in police work, court procedure and criminal detection. The object is not to make policemen out of the boys, but to give them and their companions a better understanding of police problems and methods, and incidentally to point out that "crime doesn't pay."

Salt Lake City's Chief of Police is working on a plan to reduce the disproportionately large amount of juvenile crime in that city by enlisting the cooperation of community agencies. This plan resembles the system followed in Los Angeles County, Calif., where a highly organized Crime Prevention Division in the Police Department is aided

OPEN UP CLOGGED AVENUES TO CITY TRAFFIC

This fully descriptive bulletin will be sent to all highway and city officials interested in quick, efficient and economical snow removal. . . . . Write for a copy.

Serious costly traffic delays can be readily averted with a Joy Snow Loader. . . . Fast—mobile—flexible—powerful—the Joy Snow Loader opens up snow-clogged streets to city traffic quickly and efficiently.

Write for bulletin giving full details.

JOY MANUFACTURING CO.
FRANKLIN · · · PENNSYLVANIA

in correctional work by 63 Coordinating Councils representative of social agencies and civic and church groups throughout the city.

The Los Angeles County Crime Prevention Division itself, as described in the current *Police Chiefs' News Letter*, official bulletin of the I.A.C.P., is directly charged with the responsibility of applying preventive or curative treatment in all matters pertaining to delinquent children. Among its numerous subdivisions are a liquor detail, which checks nightly on liquor-sale violations involving minors; a juvenile missing-persons detail, which last year located and aided nearly 8,000 runaway boys and girls; a juvenile-traffic detail, for handling all traffic-law violations committed by persons under 18; and a "pre-delinquent" detail to check on juvenile loiterers found in suspicious situations. The Los Angeles Crime Prevention Division is on duty 24 hours a day to provide emergency service in all cases of crime and dependency affecting children.

Cameras Used to Help Cities Reappraise Property

THE candid camera has been conscripted for municipal service—in the assessor's office. Supplied with miniature photographs of 90,000 buildings taken by crews of WPA photographers, the city of Toledo and its county, Lucas, are now completing a revised picture of real estate within their boundaries, according to the International City Managers' Association.

Recording the county's 350 square miles of property required the services of a small army of carefully trained WPA workers and deputy auditors. The only part of the reappraisal yet to be finished is the combination of land values with building values.

Steps in the process include: (1) recording of legal description of each of the county's 155,000 parcels of property, together with street numbers; (2) sending out field crews each composed of a deputy auditor and two WPA workers, who measured dimensions of lots and buildings; (3) photographing of all buildings to 1 x 1½ inches in size, with prints pasted on block-unit maps; (4) map making in central office, with calculation of land and building values.

To insure fairness in land valuation in different parts of the city and county, outstanding realtors and prominent land-owning farmers were enlisted as deputy auditors, says *Public Management*, magazine of the International City Managers' Association. As an added precaution, Government records of land productivity in farm lands of the area were checked, and Farm Bureau leaders and grange heads were consulted.

Toledo is only one of numerous cities that have taken steps to learn more about real estate for more equitable assessment purposes, using WPA labor. Land survey and land mapping, zoning and planning surveys, and preparation and installation of a complete system of land and building valuation are among projects accepted. About 95 governmental units have finished or are about to complete new property records alone. Four of these projects have been state-wide in scope. Texas, for example, sought to survey and classify all the rural land. Another project elsewhere has been state-wide, 25 have been county-wide, and 65 have been in cities or towns.

Survey Shows Cities Facing Complex Problems

CITY representatives, meeting in conferences held by state municipal leagues during the past month, pondered many a pressing problem indicative of the growing complexity of local government. Ten of these league meetings over the country made the following varied recommendations, as shown in a round-up by the International City Managers' Association:

In Kansas, cities took a concerted stand for a more equitable share of gasoline and motor-vehicle taxes to maintain and construct city streets.

In North Carolina the League of Municipalities urged increase of vocational education for adults and youth in the public schools, to avoid loss of skilled workmen through long unemployment.

North Dakota cities decided that their delinquent tax problem, acute because of lax tax laws and severe economic and drouth conditions, might be partially solved if enforcement were more stringent and if cities, counties and school districts joined in collection campaigns.

Michigan cities seek a study of the entire tax structure, both state and local, the results to be presented to a special session of the Legislature on tax matters only.

Illinois cities requested from the Legislature power to establish municipal parking lots, to regulate and license solicitors, canvassers and peddlers.

Virginia cities seek, among other new laws, legislation permitting them to undertake low-cost housing; increased state support of public schools; a more equitable distribution of gas tax receipts to cities and towns; and prohibition of fireworks except under certain conditions.

Texas cities opposed the waiving of penalties on delinquent taxes.

Nebraska municipalities urged uniform and up-to-date municipal accounting.

Kentucky cities authorized their League to ask the U. S. Bureau of Public Roads to extend to municipalities the same matching of funds for municipal streets now extended to counties on farm-to-market roads. They also voted to seek legislation securing them a percentage of state auto license fees and gasoline taxes for city streets.

Wisconsin cities asked the state to pay one-half the relief costs for the next two years; petitioned the Governor and Legislature to enact permissive low-cost housing acts for cities and villages.

The above recommendations are reported in *Public Management*, magazine of the International City Managers' Association.

San Diego Owners Back Law to Control Building Design

ARCHITECTURAL control by municipal ordinance is proving both satisfactory and popular in San Diego as a means of preserving good exterior building design. When the ordinance was passed, three years ago, as an amendment to the building code, only part of the city fronting the principal highway was affected. Since then, according to the American Society of Planning Officials, four areas have been added, mainly on petition of property owners; and petitions are now being circulated to bring over 5,000 acres more under the same control.

The municipal ruling requires that all applications for building permits, plans, and specifications for buildings within the prescribed areas be referred by the Building Inspector to the City Planning Commission for approval as to the exterior design. If the design is approved, the building permit is issued. If it is not approved, the City Planning Commission confers with the applicant and recommends needed changes.

Cities which have made large investments in civic centers, construction of other important public buildings or in park sites, frequently want to provide some method to prevent erection of ugly and inappropriate structures around such developments, points out the American Society of Planning Officials. Most municipal officials do not favor compulsory control. Voluntary control instigated by property owners themselves, as in San Diego, is regarded, therefore, as a possible solution to the problem.

The Municipal Bond Market

Recent sales of new issues from the November issues of *The Bond Buyer:*

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$200,000	Cambridge, Mass., Street	1.25	1-5 Ser.	1.24
1,000,000	Rochester, N. Y., Tax Revenue	1.5	1-5 Ser.	1.34
110,000	Manitowoc Co., Wis., Road	3	4.66 Avg.	1.83
148,300	Marion Co., Ind., Infirmary Building	2	6.33 Avg.	1.90
850,000	Minneapolis, Minn., Public Relief, Permanent Improvement (Storm Drain and Works Relief)	2.20	1-10 Ser.	2.199
750,000	Denver, Colo., Air School Site	2.25	10-19 Ser.	2.22
125,000	Montgomery Co., Texas, Hospital	2.25	1-5 Ser.	2.246
195,000	Ada Co., Idaho, Court-House	2.5	6.16 Avg.	2.39
105,000	Wellsville, N. Y., Sewer	2.75	15.16 Avg.	2.75
200,000	West Allis, Wis., School	3	1-20 Ser.	2.88
180,000	Pacheco Pass, Calif., Water District	4	11.33 Avg.	3.93
115,000	Camden Co., N. J., Park	4.25	8-30 Ser.	4.23
225,000	Mobile Co., Ala., General Funding	5.5	21.25 Avg.	5.67

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AUTOMATIC MAGNETITE FILTERS

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Automatic Magnetite & Conkey Rotary Vacuum Filters

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Manufacturers of Meters and Controllers of the Venturi Type Gauges, Air Valves and other Water Works Services.

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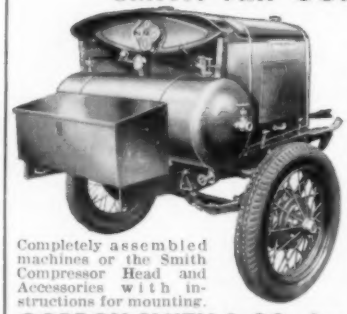

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549 W. Washington St. Chicago, Ill.

Below: Water Tank, 3,000,000-Gal. Capacity at Colton, Calif. Currie Engineering Co., Engineers, San Bernardino, Calif.

The City's Legal Rights and Duties

Conducted by A. L. H. STREET, Attorney at Law

Accidents

City held liable for injury to pedestrian who fell from unguarded retaining wall along highway (Pennsylvania Supreme Court: *Amey v. City of Scranton*, 193 Atl. 278).

City held liable for injury to boy when string of kite he was flying contacted improperly insulated municipal electric wire maintained at too low height over street intersection, on facts alleged in his petition for damages (Kansas City, Mo., Court of Appeals: *Schneiter v. City of Chillicothe*, 107 S. W. 2d, 112).

Ordinance under which city held to limit its liability for sidewalk accidents to defects as to which city had received written notice held void (New York Supreme Court, Appellate Division: *Hayward v. City of Schenectady*, 297 N. Y. Supp. 736).

That street flushing truck was so parked as to obstruct pedestrian's view in crossing street held not to constitute such nuisance as to make city liable for injury to him when car swerved around the truck (Ohio Court of Appeals, Mahoning County: *Galluppi v. City of Youngstown*, 9 N. E. 2d, 739).

Village held liable for death of one electrocuted while attaching sign to municipal light pole, if village was negligent in failing to warn decedent of an inherent danger (Minnesota Supreme Court: *Thiesen v. Minnesota Power & Light Co.*, 274 N. W. 617).

Volunteer fireman driving truck held liable for negligence causing death of fellow fireman (New York Court of Appeals: *Ottmann v. Incorporated Village of Rockville Centre*, 9 N. E. 2d, 852).

City held not negligent and hence not liable for death of swimmer in municipal pool (New York Court of Appeals: *Curcio v. City of New York*, 9 N. E. 2d, 760).

Annexation Proceedings

Owners of land in area illegally annexed to city held entitled to enjoin collection of city taxes without making state party (Texas Court of Civil Appeals: *City of Port Arthur v. Gaskin*, 107 S. W., 2d, 610).

Automobile Parking

Statutes held not to authorize condemnation of land by city for automobile parking space (Kansas Supreme Court: *Barker v. Kansas City*, 70 Pac. 2d, 5).

Business Regulations

Ordinance limiting hours during which certain business establishments might be kept open held void as being arbitrary and discriminatory (California District Court of Appeal: *Deese v. City of Lodi*, 69 Pac. 2d, 1005).

Civil Service

Policemen removed for inefficiency after due notice and hearing held not entitled to review of the removal order, in the absence of gross abuse of discretion by Civil Service Board (Texas Supreme Court: *City of Dallas v. McDonald*, 107 S. W. 2d, 987).

Councils held empowered to abolish, in interest of economy, offices created by them (Washington Supreme Court: *Müller v. City of Seattle*, 70 Pac. 2d, 786).

Contracts

Statute forbidding incurrence of municipal liabilities beyond current appropriations, excepting in extreme emergencies, held not to give effect to mere declaration by council of an emergency under which funds were ordered expended for snow removal (Massachusetts Supreme Judicial Court: *Continental Construction Co. v. City of Lawrence*, 9 N. E. 2d, 550).

Taxpayer's complaint held insufficient to show invalidity of city's contract to lease real estate for ten years (California District Court of Appeal: *Hencken v. City of Morgan Hill*, 69 Pac. 2d, 462).

Hose purchase contracts not officially authorized as required by statute held not binding on city although hose was used (Springfield, Mo., Court of Appeals: *Eureka Fire Hose Manufacturing Co. v. City of Portageville*, 105 S. W. 2d, 513).

Garbage-collection contract for one year held not vitiated by clause giving contractor option to renew for another year (Massachusetts Supreme Judicial Court: *Marble v. Town of Clinton*, 9 N. E. 2d, 522).

Proposal held converted into contract by city's notation of acceptance on it, or on the Council minutes, and city held not entitled to avoid contract because of contractor's minority, under circumstances (New York Supreme Court, Appellate Division: *De Vito v. City of Mechanicsville*, 297 N. Y. Supp. 935).

Licenses

Evidence that accused offered to sell religious tracts in home held not to sustain a conviction of peddling without a license (Georgia Court of Appeals: *Rollery v. City of Atlanta*, 192 S. E. 470).

Municipal gas tax of one cent per gallon upheld (Florida Supreme Court: *McKinnon's Specialized Service v. City of Tampa*, 176 So. 40).

Taxicab license held properly refused to applicant who refused to comply with ordinance requiring taximeters and adherence to fare schedule (New Hampshire Supreme Court: *State v. Guertin*, 193 Atl. 237).

Municipal Debts

Municipalities held empowered to compromise and settle claims where there is reasonable doubt as to liability (Florida Supreme Court: *City of Coral Gables v. State*, 176 So. 40).

Municipal Property

Mere fact that municipal property could have been sold at a higher price than received held not to invalidate sale (Wyoming Supreme Court: *Quackenbush v. City of Cheyenne*, 70 Pac. 2d, 577).

Municipal Reorganization

Act repealing city charter and changing government from aldermanic to commission form upheld (Florida Supreme Court: *State v. O'Quinn*, 175 So. 769).

Municipal Responsibility

City held not enjoinable for unwarranted exercise of powers by police officers interfering with private business, such officers being the parties who should be sued (Ohio Court of Appeals, Hamilton County: *Lyons v. City of Cincinnati*, 9 N. E. 2d, 988).

Municipal Utilities

Under ordinance, consumer of water held properly charged on flat-rate basis where meter had been tampered with (New York City Municipal Court: *Parsons Construction Corp. v. City of New York*, 298 N. Y. Supp. 276).

Nuisance

Barns and inclosures held not abatable as nuisance where half of residents of district testified conditions were unobjectionable (Arkansas Supreme Court: *City of Fort Smith v. Bonner*, 107 S. W. 2d, 539).

Official Eligibility

That a candidate for mayor was a qualified elector of a voting precinct embracing the municipality held not to make him eligible to election where he had resided in the municipality less than three months (Alabama Supreme Court: *Huey v. Etheridge*, 175 So. 268).

Official Tenure

Statute providing for appointment of civil service commissioners by mayor, etc., to replace those appointed by council held unconstitutional (Pennsylvania Supreme Court: *Commonwealth v. Clark*, 193 Atl. 634).

Official Vacancies

Borough burgess's vote to break tie vote at previous meeting of councilmen on appointment to vacancy held invalid where councilmen did not take a new vote, but appointment held validly made by proper vote at still later meeting, although such time had elapsed as would have empowered a court to have filled the vacancy (Pennsylvania Supreme Court: *Commonwealth v. Mozney*, 192 Atl. 648).

Ordinances

Provisions of a statute, ordinance or other public document held properly incorporated into ordinances by reference (California Supreme Court: *Banks v. Civil Service Commission*, 70 Pac. 2d, 615).

Where conviction under penal ordinance imposed greater punishment than permitted by the ordinance, held that conviction was properly affirmed but case remanded to City Court for new sentence conforming to the ordinance (Louisiana Supreme Court: *City of Shreveport v. Scott*, 175 So. 622).

Police Measures

Ordinance prohibiting possession of gambling devices held to cover "pin ball" machine whether chips issued to winners were payable in cash or in merchandise (Wisconsin Supreme Court: *City of Milwaukee v. Burns*, 274 N. W. 273). The Court also holds that an action for violating the ordinance is governed by procedure in civil cases.

Ordinance forbidding assemblies for purpose of gambling upheld (Georgia Court of Appeals: *Cobb v. City of College Park*, 191 S. E. 873).

Ordinance forbidding distribution of handbills, samples of foodstuffs, etc., to pedestrians on streets in congested districts upheld (Ohio Court of Appeals, Cuyahoga County: *In re Thornburg*, 9 N. E. 2d, 516).

Taxation

Levies for "streets and alleys," "election fund," "light fund," etc., held not invalid as stating a double purpose or as being indefinite, but a levy for "sidewalk and bridges" held invalid for combining two separate purposes (Illinois Supreme Court: *People v. Illinois Central Railroad Co.*, 9 N. E. 2d, 310).

Traffic Regulations

Ordinance penalizing taxicab operator to occupy stand for which he has no permit and which is occupied by another operator upheld (California Superior Court, Appellate Department, San Francisco: *People v. Galena*, 70 Pac. 2d, 724).

Funeral procession held not entitled to right-of-way as unit over other vehicles at intersections (Pennsylvania Superior Court: *Davis v. Pittsburgh Railways Co.*, 194 Atl. 402).

Warrants

City held not estopped to assert want or failure of consideration for a warrant in the hands of an assignee of the payee (United States Circuit, Fifth Circuit: *City of West University Place v. Pleasant*, 90 Fed. 2d, 844).

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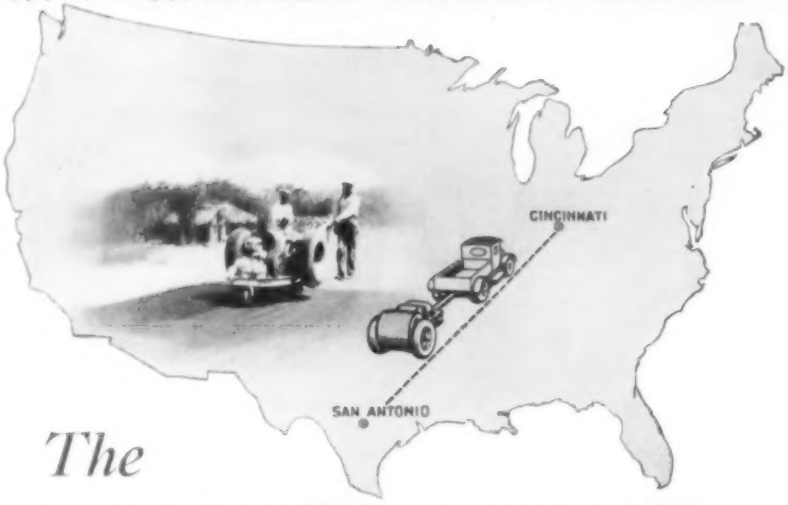

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Zoning and Planning Notes

With the cooperation of
EDWARD M. BASSETT
Author of "Zoning: The Laws, Administration and Court Decisions During the First Twenty Years"

Change from Business to Residential Zone

CONNECTICUT.—*Strain v. Mims*, 193 Atl. 754 (Supreme Court of Errors, July 27, 1937).—The plaintiffs have, since 1915, conducted a general neighborhood store on property at one corner of the intersection of two roads, known as "Four Corners." When, in 1926, the town adopted a comprehensive zoning ordinance, the land at all four corners of the intersection to a certain depth was placed in a No. 1 business zone, which permitted the continued use of the plaintiffs' premises for a general store and, if permitted by the board of appeals, for a gas filling station.

On or about June 19, 1933, the plaintiffs applied to the zoning board of appeals for approval of the premises as a site for two gasoline pumps. On June 28, 1933, certain nearby landowners made application to the Zoning Commission to rezone the property so that it would become an "A" residence zone. This would have the effect of making the use of the plaintiffs' premises for store purposes a non-conforming use and automatically prevent the grant of the application for the establishment of the gas filling station there.

The plaintiffs, owning more than 20 per cent of the area of the land in question, filed a written protest against the change with the Zoning Commission.

The proposed change would greatly lessen the value of plaintiffs' property. Where zoning regulations are for the public health and safety and the general welfare, ordinarily the fact that their adoption causes loss to an individual is no reason to hold them invalid. However, where the value of property of an individual is seriously affected by a zoning regulation especially applicable to him, this fact imposes an obligation carefully to consider the question whether the regulation does in fact tend to serve the public welfare and the recognized purposes of zoning.

We are not here concerned with the validity of a comprehensive ordinance excluding business as a whole from a residential area, which ordinarily would be sustained as within the police power. Practically, the change proposed involves only a single property. It must also be borne in mind that the proposal is to make a change in a plan of zoning which went into effect in 1926, and in apparent reliance upon which the plaintiffs have made very substantial improvements upon their property. One of the essential purposes of zoning regulations is to stabilize property uses; and this is indicated by the fact that legislatures usually make changes in regulations conditional on certain procedural requirements designed to safeguard the rights of individuals. Where a proposed change involves only a single or a very few properties, to a considerable extent the same considerations apply as those with reference to successive applications for permission to use property for a certain purpose. Ordinarily such a change should be made only where new or additional facts appear, or there are other considerations materially affecting the merits which have intervened since the regulations were adopted.

There has been no substantial change in the neighborhood since the original adoption of the zoning regulations. It is suggested that a change in the ordinance would increase the value of neighboring properties; but this does not justify the change. The controlling fact is that the value of plaintiffs' property would be decreased about 70 per cent without promoting the general welfare thereby. Such a change is not one that the Zoning Commission could reasonably vote.

The vote making the change is not necessarily invalid as a whole because of its unlawful effect upon the plaintiffs' property, and is held by the Court to be void only as to that property.

Residential District—Funeral Home—Parties

KENTUCKY.—*Al. M. Smith et al., doing business as Oran W. Smith and Sons v. Selligman et al., members of Board of Adjustment and Appeals of the City of Louisville* (Court of Appeals, October 5, 1937), not reported.—Smith & Sons owned and operated an undertaking establishment at 1029 South Sixth Street in the city of Louisville. On October 2, 1936, they applied to the city for a permit to establish their business at 1359 South Third Street, and the application was refused by the Building Inspector and also by the Board of Adjustment and Appeals, to which an appeal had been prosecuted. On November 11, 1936, and after the decision of the Board, the Smiths paid $200 for a one-year option to purchase the South Third Street property for $15,000. Within the required time the Smiths filed a petition for a review of the decision of the Board. Though of the opinion that the action of the Board was valid, the Court dismissed the petition on the ground that the Smiths had no such property right as entitled them to maintain the proceeding either before the Board or in the Court.

The Smiths appealed to this Court, which decides that the Smiths had a right to proceed both before the Board and in the Lower Court. The Kentucky statute gives "any person aggrieved" that right, and a person whose application for a permit is refused *is* aggrieved; and although he may not be entitled to any relief, he may challenge the action of the Board as well as that of the Circuit Court.

Taking up the case on its merits, this Court decides that the Board was right in deciding that the establishment of a funeral home at the place in question is contrary to the public interest, and that the denying of the application by the Board did not work an unwarranted hardship or injustice. The particular block is placed by the zoning ordinance in an apartment house district, which is strictly residential in character. No case of unjust discrimination is presented. It is true that there are now two funeral establishments in the block in question, but they were there before the zoning ordinance was passed. On the other hand, the Smiths acquired their option on the property and applied for a permit years after the enactment of the ordinance. Clearly the difference in circumstances is sufficient to authorize a different ruling as to the Smiths.

The Court turns now to the question whether the special conditions were such as to require the Board to vary the terms of the ordinance in favor of the Smiths, and finds that they were not; noting also the fact that the city is divided into eleven districts, in seven of which funeral homes may be conducted, thus giving the Smiths, if not satisfied with their present location, a sufficient latitude in the choice of a new one.

EDITOR'S NOTE.—The exclusion of the funeral home from a residential district, in this case, is in accord with the great weight of judicial decision; see these Notes for August, 1934, and especially for May, 1933, with a note referring to other authorities.

Private Restrictions

MICHIGAN.—*Woughter v. Van Martin*, 275 N. W. 336 (Supreme Court, October 4, 1937).—The plaintiff is the owner of lot No. 4, and defendant of lot No. 5, in a subdivision in Garden City, Mich. On lot No. 5 the defendant has undertaken the construction of a two-story building within 9.1 feet of the street line on which these lots face.

In all the conveyances for lots sold by the subdivider, there is a building restriction that no building shall be erected less than 50 feet from the front line of the lot. Defendant claims that this restriction should be held unenforceable because it has been violated by other property owners in the subdivision. But, so far as permanent structures are concerned, there are no material violations of this restriction in the block where the lots of these litigants are located. The nearest substantial encroachment is in the next adjoining block, a distance of

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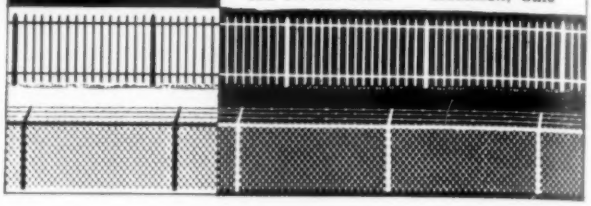

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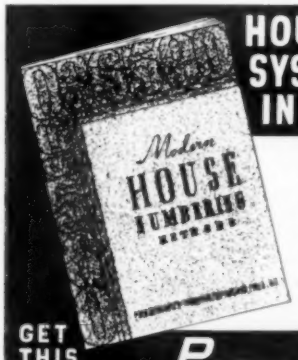

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approximately 1,500 feet from plaintiff's property. In addition, defendant has erected and maintained for some time on the front of his lot small temporary structures from which he has sold groceries and ice.

It is self-evident that the restriction and its uniform observance is of value to the property owners in this subdivision. It should be enforced notwithstanding it is not a restriction aimed at controlling the use to be made of the buildings erected, but instead only of their location, thus protecting adjoining owners as to light, air and view. Such restrictions are valid and enforceable.

Violations of building restrictions some distance away do not operate to destroy rights not seriously affected thereby. The true rule seems to be that even after one or more breaches, the restriction will be enforced if it can be shown to be of value to a complainant. The erection and maintenance, in this case, of temporary structures in violation of the restriction did not result in its nullification.

Cemeteries

NEW YORK.—*Moore v. United States Cremation Co., Lim.*, 275 N. Y. 105, 9 N. E. 2d, 795 (Court of Appeals, July 13, 1937).—This case, in its progress through the courts, has already appeared twice in these Notes.

The defendant company is organized under the New York General Business Law, for the purpose of cremating human dead bodies, and storing the ashes in columbaria. It seeks permission to establish a crematory at a given location in the town of Oyster Bay, Nassau County, N. Y. The land in question is in a so-called "Business H" zoning district, in which cemeteries are allowed.

The Supreme Court decided that this permission should be given. That decision, reported in our Notes for May, 1936, was, on appeal to the Appellate Division, reversed, a summary of this judgment appearing in our Notes for January, 1937. The case was then appealed to the Court of Appeals, the highest Court of the state, which reversed the Appellate Division and sustained the Supreme Court, thus holding that the defendant has no right to establish his crematory at the desired location, for the following reasons:

The New York State law provides that it shall not thereafter be lawful (with certain exceptions not here applicable) to use any land for "cemetery purposes." In the opinion of the Court, a crematory and columbarium is within this prohibition. A cemetery is a place for the burial of the dead; not necessarily in the ground, but in any other way. The entire body need not be preserved in the same form or in the same nature as on the day of death. The disposal of the remains of the dead person in any form, preserved in a receptacle, is within the law, and the place of disposal is a cemetery.

EDITOR'S NOTE.—The Supreme Court held that the provision of the zoning ordinance placing the land in question in a zone where cemeteries were permitted, did not, in view of the state law referred to above, make it lawful to establish them there. The Court of Appeals, in its opinion, does not refer to this point, but, having sustained the Supreme Court as it did, would seem necessarily to have upheld it in this point also.

And in so doing, the Court followed generally established law. See note to this case in our May, 1936, issue.

Billboards

Edward T. Hartman, State Consultant on Planning for the state of Massachusetts, writes this department as follows:

"I am very much interested in the Zoning Notes on billboard decisions in the October AMERICAN CITY. Some of the people have been urging both zoned and unzoned places to adopt special billboard regulations. I have been over the matter at length with the Town Counsel of Lexington, a very able man, and he says that he wants no special law and that he expects to keep control by preventing all billboards in residence districts. . . . A billboard is a use of land. It is, moreover, a business use of land. . . .

"As I see the matter now, the chief end to be accomplished in regulating billboards is to keep them out of residential districts, along with stores, filling stations, and other business uses. . . . I think you are right in your editorial comment, to the effect that a well-considered zoning regulation will be upheld when it states definitely what types of uses are permitted in residential districts and bars everything not mentioned. My understanding is that billboards are subject to regulation under zoning laws the same as all other uses in all parts of the country except Massachusetts, owing to the unfortunate Falmouth decision: *Falmouth v. General Outdoor Advertising Co.*, 264 Mass. 85. This principle is well established in *Liggett v. Pittsburgh*, 136 A. 619. This seems to me to be the only proper attitude in regard to the matter."

Municipal and Civic Publications

Prices quoted do not include postage, unless so stated

Payroll Manual

Payroll Manual: A Centralization System for Municipalities and Corporations.—By Elmer Frederick Bernhardt, Director, The Central Payroll Bureau of Baltimore, Md. Published by the Central Payroll Bureau, Baltimore, Md., 1937. 179 *pp.* $100.00.

The city of Baltimore created its Central Payroll Bureau in 1924 during a campaign for efficiency and economy in government departments. The individual departmental payroll system was abolished, and a centralized agency was established, introducing recognized business and accounting principles comparable to those found in public utilities and other large private corporations. For municipalities, public utilities and any other enterprises employing 500 or more persons who seek to install this modern method of payroll accounting, this manual has been published as an aid. It contains a large series of exhibits which completely illustrate the procedure with forms used.

Road Builders

The Convention Proceedings, 1937, of the American Road Builders' Association is another splendid edition of the Association's annual contribution to knowledge of the highway industry and profession. All types of modern highway surfacing and pavement construction receive accurate analysis, and the standards, methods, materials and equipment mentioned are all of the latest. Other relevant subjects discussed are highway planning, financing, administration, legislation and safety. Any highway engineer should be able to catch some light on his particular problems within the pages of this imposing volume. 827 pp. $10.00. (Apply to the American Road Builders' Assn., National Press Bldg., Washington, D. C.)

Architecture and Modern Life

Architecture and Modern Life.—By Baker Brownell and Frank Lloyd Wright. Harper & Brothers, New York. 339 pp., including Index, 15 illustrations. $4.00 *from* THE AMERICAN CITY.

This book predicts the doom of the great cities of today and envisions the "Broadacre City" of the future, which "would be everywhere and nowhere."

Those who seek a philosophical discussion of architecture of the past, present and future, and a forecast of social life in America in the days to come, will find much that is stimulating in these pages. The photographs and plans of typical Frank Lloyd Wright houses add touches of realism. But seekers for practical methods of public procedure will be less well rewarded; not a single entry, for example, is to be found for City Planning or Zoning in the index to the volume. On the contrary, the ideal community of the future is to be "a free pattern." "It is of the ground and with the ground. Wherever this free pattern is applied, it varies with the ground and as the conditions of climate and life vary. The ground may happen to lie suited to one kind of life or to many kinds. The common spirit of the people involved is disciplined automatically from within by means and methods and materials which are all organic."

To the composite treatise Professor Brownell contributes chapters on "Expression and the Modern World," "Society and the Future of Expression," and "A Balanced Society"; while Mr. Wright's chapters have to do with "Some Aspects of the Past and Present of Architecture" and "Some Aspects of the Future of Architecture." The opening chapter, on "Architecture and Social Life," is the joint work of the two authors, and the final chapter, on "Broadacre City," is in the form of a dialogue between them.

The Abolition of Poverty

The Abolition of Poverty.—By James Ford and Katherine Morrow Ford. The Macmillan Company, New York. 300 pp., including Index. $2.50 *from* THE AMERICAN CITY.

If excuse were needed for bringing this important new book to the attention of THE AMERICAN CITY's readers, it would suffice to point out the very definite relationship of poverty not merely to poor relief, but to many other pressing municipal problems—public health, crime, juvenile delinquency, housing, and the rest. The book, indeed, as the authors explain in their preface, is an outgrowth of a conviction which became increasingly firm when completing their previous book, "Slums and Housing," that the slum problem could not be met satisfactorily without the prior or concomitant elimination of poverty.

No panacea is presented, but all major phases of the poverty problem are treated with an exceptional combination of compactness and comprehensiveness. Heredity, physical and mental incapacity, family, home and neighborhood handicaps, personal hazards and social insecurity, economic and governmental factors, major disasters, and war, are among the subjects discussed. Each of the fourteen chapters is followed with an excellent list of notes and references.

Milwaukee Housing Conference

"The Proceedings of the Milwaukee Public Housing Conference" is a record of a conference held in Milwaukee on October 16, 1937. A number of speeches by local and national figures in the housing field cover the housing problem in general and the specific needs and methods of meeting those needs in Milwaukee. 25c. (Apply to the Milwaukee Housing Council, Mariner Tower, Milwaukee, Wis.) (See p. 54 of this issue.)

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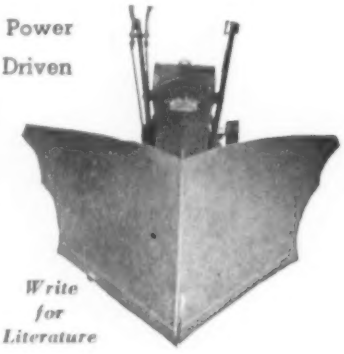

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Street Traffic

Murray D. Van Wagoner, Michigan State Highway Commissioner, points out that since Detroit produces the greatest number of motor vehicles of any American city and uses the greatest number, it should also rank first in the efficient and safe regulation of the motor vehicle on its streets. This observation appears in the letter of transmittal of a report entitled "Street Traffic, City of Detroit, 1936-1937," prepared and published under the direction of the Michigan State Highway Department in cooperation with the Detroit Police Department and the Works Progress Administration. D. Grant Mickle of Jensen, Bowen and Farrell, engineers, worked on it as Assistant Director in Charge of Traffic Surveys for the Highway Planning Survey, of which this first report is a part. The scope of this study is broad, and a detailed analysis is included under each of the four parts—"Physical and Historical Aspects," "Traffic," "Parking," and "Public Safety." On the basis of the factual data, the Commission makes recommendations both as to the physical improvements and as to the regulatory improvements in Detroit's traffic provisions, including even a full traffic ordinance. The physical improvements visualized are kept within budget possibilities. This survey is not only valuable but beautiful, handsomely printed and illustrated with many fine maps, charts and drawings. 313 pp. $5.00. (Apply to Murray D. Van Wagoner, State Highway Commissioner, Lansing, Mich.)

Social Science Encyclopaedia

Encyclopaedia of the Social Sciences.—Editor-in-Chief, Dr. Edwin R. A. Seligman, Professor of Political Economy, Columbia University; Associate Editor, Dr. Alvin Johnson, Director of the New School for Social Research. The Macmillan Co., New York. 1937. 8 *vols.* $45.00 *from* THE AMERICAN CITY.

This splendid reference work, which was completed in 1935, is being offered in a new edition in order to make it more widely available. A set of volumes which is so valuable a compilation of scholarship throughout the world should appear on the shelves of every library, no matter how small. Its scope is broad, covering the purely social sciences—politics, economics, history, law, anthropology, penology, sociology, social work; the semi-social sciences—ethics, education, philosophy, psychology; and the sciences with social implication—biology, medicine, geography, linguistics, art. All the subjects are dealt with by recognized specialists in the field, and the articles range from a few lines in length to ten or twenty thousand words. The items are arranged alphabetically and are systematically cross-referenced. The style is clear and direct, and well fitted to assist the average man in establishing a sounder basis for his opinion on major questions of social progress.

America Spreads Her Wings

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Water Sources of New York

The State of New York Division of State Planning has taken its cue from the National Resources Committee's report on "Drainage Basin Problems and Programs" and has published "A Preliminary Survey of the Water Sources of New York," following the drainage basin procedure. In addition to the brief survey, regional or special water problems are summarily presented. The following subheads indicate the scope of the report: "Drainage Basins," "Regional Problems," "Water Supply," "Water Power," "Navigation," "Recreation," "Floods," and "Basic Data." 20 pp. and 16 plates. (Apply to the State of New York, Division of State Planning, Albany, N. Y.)

Proportional Representation

Proportional Representation—The Key to Democracy.—By George H. Hallett, Jr., Secretary of the Citizens Union of the City of New York and Associate Secretary of the National Municipal League; with the cooperation of Clarence Gilbert Hoag, Honorary Secretary of the Proportional Representation League. Published by the National Home Library Foundation, Washington, D. C. 1937. *Order from the National Municipal League, 309 E. 34th St., New York. xii* + 177 *pp.* 25c.

The adoption of proportional representation by New York City in city council elections is bound to give a tremendous boost to this instrument of democracy. The New York Supreme Court has added another favorable decision on its constitutionality to those pronounced by the Ohio courts in the face of unfavorable decisions in Michigan and California. By this device for increasing the effectiveness of the individual citizen's vote, candidates can stand on their own principles and receive votes according to their true popularity. P. R. votes cannot be monopolized by a party machine, since minority groups are allowed to be represented on the ballot in proportion to their numbers. In New York the voter has simply to number his choices, 1, 2, 3, etc., beside the list of names on the ballot, and he can be assured that his vote will count for one of his selected candidates, the first in order of his choice to need his vote as one of an assured 75,000, the number necessary to election. This volume is a popular presentation of the principles and practice of proportional representation.

Social Work

Proceedings of the National Conference of Social Work, 1937.—*University of Chicago Press, Chicago.* 1937. *xi* + 699 *pp.* $3.00 *from* THE AMERICAN CITY.

The National Conference of Social Work brings us annually a collection of papers covering the latest developments in the field of social work and related subjects. Each year since 1933 the paper considered the most important contribution to this sphere of thought and activity has received a reward from Chester D. Pugsley of New York. This year the award was given to John A. Kingsbury for his paper, "Health Insurance in a National Health Program." A paper receiving honorable mention was "The Paroled Offender," by Winthrop D. Lane.

Zoning Survey

The Zoning Committee of the Planning Board of St. Paul, Minn., has conducted a zoning survey with the aid of the Works Progress Administration. Published under the title of "A Zoning Survey, Saint Paul, Minnesota, September, 1936," its purpose is to present objective findings on which an evaluation of the zoning ordinance of the city in effect since 1922 could be based. The survey contains a review of the changes and amendments in the ordinance since its passage, front-footage studies of the use of property, a complete picture of property use in St. Paul, an investigation of existing non-conforming uses and their effect on the surrounding neighborhood, and an examination of the extent and nature of home occupations. The chapters are summarized, and an appendix contains a digest of the St. Paul zoning ordinance. (Apply to the St. Paul Planning Board, St. Paul, Minn.)

Peoria City Plan

The City Planning Commission of Peoria, Ill., has had a comprehensive city plan prepared for Peoria by Harland Bartholomew and Associates, St Louis, Missouri. The finished study, which took three years to complete, has been published in an imposing paper-bound volume entitled "A Comprehensive City Plan, Peoria, Illinois." Starting out with a short dissertation on "Principles of City Planning," the study then delves into the special local problems, transit, recreation, zoning, etc., analyzing them separately and recommending steps for their immediate improvement and for their future development. 127 pp.; 45 plates. (Apply to the City Planning Commission, Peoria, Ill.)

A summary of the above plan has been prepared by the Peoria City Planning Commission under the title of "Planning a Greater Peoria." 32 pp.; 20 plates. (Apply as above.)

Financial Survey of Housing

Financial Survey of Urban Housing: Statistics on Financial Aspects of Urban Housing.—A Civil Works Project directed by David L. Wickens under the supervision of N. H. Engle, Assistant Director of the Bureau of Foreign and Domestic Commerce, U. S. Department of Commerce. Government Printing Office, Washington, D. C., 1937. *xxvi* + 1245 *pp.* $3.25.

This survey of the economic and financial phases of residential properties in representative American cities was undertaken as a coordinate inquiry with the real property inventory of 1934. It contains information on the size, age, and material of structure; on value or rent; on the cost and method of acquisition of homes; the amount, sources, interest rate, and other terms of any credit secured by the property; and the extent of delinquency of rents or loans. Other figures cover the number of occupants per dwelling unit, the family income, the time employed, and the amount of income expended on rent. The figures are taken in general from 61 representative cities, but 22 cities have been selected for analysis in special detail. The information is given for 1930, 1933 and 1934 to provide a contrast between the earlier depression years and the later more severe years. This financial survey of urban housing in America is undoubtedly the most comprehensive compilation of such financial facts ever available to the American public and should aid greatly in clarifying our housing difficulties, the first step toward their solution.

Exploring Our Neighborhood

Exploring Our Neighborhood.—By Mildred Moody Eakin. The Abingdon Press, New York, 1936. 252 *pp.* $1.25.

This book is a guide for teachers of third and fourth grade church schools. It suggests that children of this age be brought to an intelligent understanding of the community of which they are a part, particularly through the study of their own church and neighboring churches and their local government. The plan for instruction presented in this volume has been tested out in several experimental centers. Two "Pupil's Work Books" by the same author are available, entitled "Under the Church Flag" and "In Anybody's Town." The Abingdon Press; 25c each.

City and County Parks

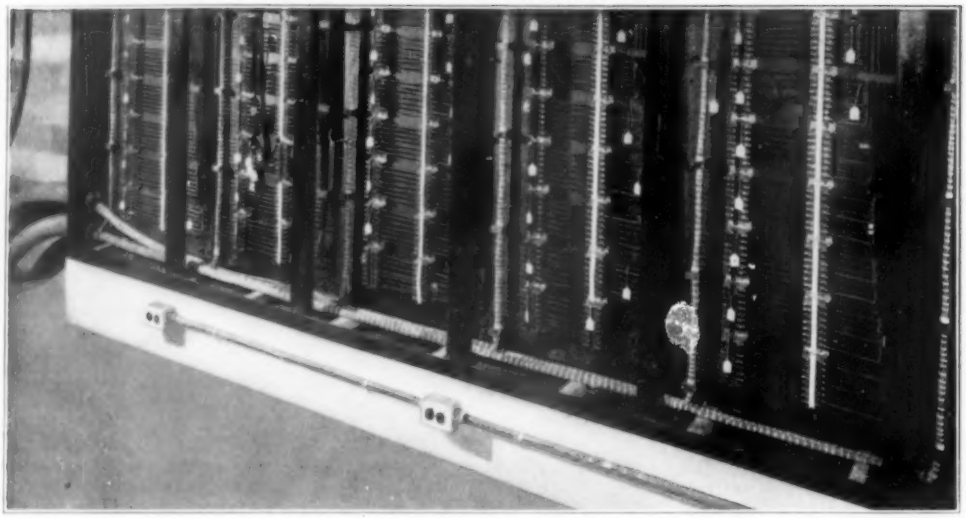
Interest in public recreation has received a great impetus since the depression. Consequently, our park lands have greatly increased in number, size and equipment over the past few years. Since park and recreation officials, planning groups, and other municipal authorities greeted past surveys of park lands with enthusiasm, the National Park Service believed it desirable to make a study of the recent expansions, particularly in cities. Hence we have "Municipal and County Parks in the United States, 1935," which is the published information gathered by George D. Butler, of the National Recreation Association, in cooperation with the National Park Service. 147 pp. (Apply to Government Printing Office, Washington, D. C.)

We and Our Highways

The General Electric Company has discovered that its employees are in greater danger on the highways where they walk and ride than in the plants where they work. In a brief publication entitled "We and Our Highways," GE has outlined a 7-point platform for highway safety and discussed in particular the problem of highway lighting. 8 pp. (Apply to the General Electric Co., Schenectady, N. Y.)

Films for Training

"Films as an Aid in Training Public Employees," by John E. Devine, is a very interesting study of some of the possibilities of this new educational medium. Mr. Devine surveys the current uses of films for public service training and other types of instruction, and then discusses the potential uses of public service training films in Federal, state and local government departments. In some departments, such as fire and police, they could be tremendously helpful. Finally, the possibilities of the production and distribution of such films are analyzed, and the next steps toward making the most of this training device are suggested. 114 pp. $1.00. (Apply to the Committee on Public Administration of the Social Science Research Council, 306 E. 35th St., New York.)



Lives depend on these LATOX Cables

Down underneath the water of Boston Harbor automobiles whiz along safely at thirty miles an hour. To insure the safety at all times of this traffic underneath Boston Harbor a great deal of the equipment must be controlled from a central point. Fans, pumps, lights, signalling devices, all must be instantly responsive if safety is to be continued.

In the tunnel, space for control cable conduits was costly, consequently, small diameter, dependable cables were of vital importance. The picture above shows two Simplex-LATOX insulated cables entering the cable terminal board at the Boston end of the tunnel. These cables, 259-conductors each, are only 1½" in diameter. If they had been insulated in the conventional way they would each be more than 3" in diameter.

Simplex-LATOX rubber insulation is designed to provide small diameter, low weight, moisture-proof cable for supervisory controls of utility substations, police and fire alarm systems, electric or steam railroad control and signal systems. For all these applications, Simplex-LATOX insulation combines the advantages of rubber and paper insulation for almost the small diameter and weight of paper insulation.

Simplex-LATOX is waterproof, permanent and retains indefinitely the qualities of high-grade rubber insulation. It is made directly from prevulcanized rubber latex having uniform physical and electrical characteristics.

A booklet describing this new insulation is ready for distribution. Return the coupon below and we will send you one gladly.

Simplex Wire & Cable Co., 79 Sidney St., Cambridge, Mass.

Simplex – LATOX

Light wall insulation made directly from rubber latex

Name_____

Company_____

Street_____

City and State_____

A Joint Sanitary District

"Bloomington and Normal Sanitary District, 1919-1936" is a booklet of information for the residents of Bloomington and Normal on their joint sewage-disposal plant. Many citizens are unaware of the service of such public institutions to the welfare and health of the community. This pamphlet traces the history of the plant, outlines simply the sewage-disposal process, and invites the public to visit the attractive park surrounding the plant as well as the plant itself. 48 pp. (Apply to the Board of Trustees, Bloomington and Normal Sanitary District, 304 Unity Bldg., 203 N. Main St., Bloomington, Ill.)

Chicago Water Code

"Sections of the Revised Chicago Code of 1931 Relating to the Bureau of Water, with Amendments up to and Including June 1, 1937" have been compiled and mimeographed. 28 pp. 30c. postpaid. (Apply to the Municipal Reference Library, 1005 City Hall, Chicago, Ill.)

Other Reports Received

CHICAGO, ILL.—Annual Report of the Treasurer, 1936. 36 pp.

OHIO COUNTIES.—"Comparative Statistics, Counties of Ohio, 1936." 55 pp.

PASADENA, CALIF.—Annual Report, 1936-1937, Water Department. 72 pp.

VERMONT URBAN COMMUNITIES.—"Relief Administration in the Urban Communities in Vermont," by George C. Viethcer. Norwich University, Northfield, Vt. 129 pp.

Conventions -- When and Where

(Figures in parentheses following the name of the convention city indicate the estimated attendance other than local)

Meeting is annual convention unless otherwise designated

DECEMBER 10-12.—WASHINGTON, D. C.
American Public Welfare Association. Conference. (Wardman Park Hotel.) Dir., Fred K. Hoehler, 850 E. 58th St., Chicago, Ill.

DECEMBER 10-11.—PRINCETON, N. J. (100)
New Jersey Health and Sanitary Association. Sec., Dr. Edward Guion, Drawer D, Northfield, N. J.

DECEMBER 13-14.—CHICAGO, ILL.
Nationwide Conference on Zoning, called by National Resources Committee. Exec. Officer, Charles W. Eliot 2d, Interior Bldg., Washington, D. C.

DECEMBER 27-30.—CHICAGO, ILL.
American Library Association. (Palmer House.) Sec., Carl H. Milam, 520 N. Michigan Ave., Chicago, Ill.

DECEMBER 28-30.—ATLANTIC CITY, N. J.
Tax Policy League. (Chalfonte-Haddon Hall.) Exec. Sec., Dr. Mabel L. Walker, 309 E. 34th St., New York.

DECEMBER 29.—NEW YORK.
Luncheon meeting. (Hotel New Yorker.) *American Water Works Association—New York Section.* Sec., R. K. Blanchard, 50 W. 50th St., New York. *American Water Works Association—New Jersey Section.* Sec., P. S. Wilson, 325 Washington St., Glen Ridge, N. J.

JANUARY 7-8, 1938.—BOSTON, MASS. (500)
Massachusetts State Association of Selectmen. (Gardner Auditorium—State House.) Exec. Sec., Axel E. Z. Betterman, Hotel Westminster, Boston, Mass.

JANUARY 12-14.—CINCINNATI, OHIO.
National Paving Brick Association. (Netherland-Plaza Hotel.) M'ng Dir., G. F. Schlesinger, 1245 Nat'l Press Bldg., Washington, D. C.

JANUARY 17-21.—CLEVELAND, OHIO.
American Road Builders' Association. Sec., Charles M. Upham, 952 Nat'l Press Building, Washington, D. C.

JANUARY 17-19.—WILLIAMSBURG, VA.
American Society of Landscape Architects, Inc. Exec. Sec., Bradford Williams, 9 Park St., Boston, Mass.

JANUARY 17-21.—STILLWATER, OKLA.
Oklahoma Water and Sewage Conference. (Oklahoma Agricultural and Mechanical College.) Sec.-Treas., H. J. Darcy, State Health Dept., Oklahoma City, Okla.

JANUARY 19-21.—NEW YORK.
American Society of Civil Engineers. Sec., George T. Seabury, 33 W. 39th St., New York.

JANUARY 20-22.—NEW YORK.
New York State Sewage Works Association. Sec.-Treas., A. S. Bedell, State Dept. of Health, Albany, N. Y.

JANUARY 22-24.—WASHINGTON, D. C. (200)
National Public Housing Conference. Sec., Helen Alfred, 112 E. 19th St., New York.

JANUARY 24-28.—NEW YORK.
American Institute of Electrical Engineers. Winter convention. (Engineering Societies Bldg.) Nat'l Sec., H. H. Henline, 33 W. 39th St., New York.

JANUARY 24-28.—NEW YORK.
American Society of Heating and Ventilating Engineers. (Hotel Biltmore.) Sec., A. V. Hutchinson, 51 Madison Ave., New York.

JANUARY 24-28.—LAFAYETTE, IND.
Purdue Road School. (Purdue University.) Address: Ben H. Petty, Prof. of Highway Engineering, Purdue Univ., Lafayette, Ind.

FEBRUARY.—NEW BRUNSWICK, N. J. (Date later.)
American Water Works Association—New Jersey Section. Sec., P. S. Wilson, 325 Washington St., Glen Ridge, N. J.

FEBRUARY.—WASHINGTON, D. C. (Date later.)
Associated General Contractors of America, Inc. M'ng Dir., E. J. Harding, 222 Munsey Bldg., Washington, D. C.

FEBRUARY 14-19.—COLLEGE STATION, TEXAS.
Texas Water Works Short School. (Agricultural and Mechanical College of Texas.) Sec., V. M. Ehlers, Austin, Texas.

FEBRUARY 15-17.—ANN ARBOR, MICH.
Conference on Highway Engineering—University of Michigan. (Michigan Union Bldg.) Sec., R. E. Morrison, Univ. of Michigan, Ann Arbor, Mich.

FEBRUARY 16-18.—ATLANTIC CITY, N. J. (1,200)
Association of Highway Officials of North Atlantic States. Sec.-Treas., A. Lee Grover, State Highway Commission, Trenton, N. J.

FEBRUARY 22-24.—CHICAGO, ILL. (600)
American Concrete Institute. (Palmer House.) Sec., Harvey Whipple, 407 New Center Bldg., Detroit, Mich.

MARCH 17-18.—JAMESTOWN, N. Y.
American Water Works Association—New York Section. (Hotel Jamestown.) Sec., R. K. Blanchard, 50 W. 50th St., New York.

MARCH 21-23.—LOUISVILLE, KY. (Tentative.)
American Water Works Association—Kentucky-Tennessee Section. Exec. Sec., Howard R. Schmidt, 420 Sixth Ave., N., Nashville, Tenn.

MARCH 21-22.—BOSTON, MASS.
Massachusetts Safety Conference. (Hotel Statler.) Gen. Mgr., Lewis E. MacBrayne, 80 Federal St., Boston, Mass.

MARCH 23-25.—WINDSOR, ONT.
American Water Works Association—Canadian Section. (Hotel Prince Edward.) Sec., Treas., Dr. A. E. Berry, Dept. of Health, Parliament Bldg., Toronto 5, Ont.

MARCH 23-25.—ATLANTIC CITY, N. J.
New Jersey Mosquito Extermination Association. (Hotel Chalfonte-Haddon Hall.) Sec., Thomas J. Headlee, State Experiment Station, New Brunswick, N. J.

APRIL.—WASHINGTON, D. C. (Date later.)
National Fire Waste Council. Mgr., Terence F. Cuneen, Chamber of Commerce of the United States, Washington, D. C.

APRIL.—LAWRENCE, KANS. (Date later.)
Kansas Water and Sewage Works Association. Sec.-Treas., E. Boyce, State Board of Health, Lawrence, Kans.

APRIL 3-5.—ATLANTA, GA. (300)
Southern Commercial Secretaries' Association. Mgr., Stanley Draper, Chamber of Commerce, Oklahoma City, Okla.

APRIL 7-8.—LAFAYETTE, IND. (Tentative.)
American Water Works Association—Indiana Section. (Purdue University.) Sec., J. R. Bruhn, Box 855, Indianapolis, Ind.

APRIL 20-22.—ST. LOUIS, MO.
Missouri Association of Public Utilities. (Jefferson Hotel.) Sec., Jesse Blythe, 101 W. High St., Jefferson City, Mo.

APRIL 24-28.—NEW ORLEANS, LA.
American Water Works Association. (Hotel Roosevelt.) Sec., Harry E. Jordan, 29 W. 39th St., New York.

MAY.—BALTIMORE, MD. (Date later.)
Maryland-Delaware Water and Sewerage Association. Sec., A. W. Blohm, 2411 N. Charles St., Baltimore, Md.

MAY 2-5.—WASHINGTON, D. C. (2,500)
Chamber of Commerce of the United States. Sec., D. A. Skinner, 1615 H St., N. W., Washington, D. C.

MAY 5-6.—COLUMBIA, MO.
Missouri Association of Mayors and Other Municipal Officials. (Hotel Tiger.) Exec. Sec., George A. Spencer, 412 Guitar Bldg., Columbia, Mo.

MAY 9-12.—ATLANTIC CITY, N. J.
National Fire Protection Association. (Haddon Hall.) M'ng Dir., Franklin H. Wentworth, 60 Batterymarch St., Boston, Mass.

MAY 13-14.—BOZEMAN, MONT.
American Water Works Association—Montana Section. Sec., Herbert B. Foote, State Dept. of Health, Helena, Mont.

MAY 19-20.—SPOKANE, WASH. (Tentative.)
American Water Works Association—Pacific Northwest Section. Sec., Fred Merryfield, Oregon State College, Corvallis, Ore.

MAY 23-26.—ST. LOUIS, MO.
National Association of Purchasing Agents. (Hotel Jefferson.) Sec.-Treas., G. A. Renard, 11 Park Place, New York.

JUNE 7-9.—STATE COLLEGE, PA.
Pennsylvania Water Works Operators' Association. Sec.-Treas., I. M. Glace, 22 S. 22d St., Harrisburg, Pa.

JUNE 13-18.—KANSAS CITY, MO.
American Library Association. Conference. Sec., Carl H. Milam, 520 N. Michigan Ave., Chicago, Ill.

JUNE 20-24.—WASHINGTON, D. C.
American Institute of Electrical Engineers. Summer convention. (Mayflower Hotel.) Nat'l Sec., H. H. Henline, 33 W. 39th St., New York.

JUNE 26-JULY 2.—SEATTLE, WASH.
Joint meeting. (Olympic Hotel.) *American Public Welfare Association.* Dir., Fred K. Hoehler, 850 E. 58th St., Chicago, Ill. *National Conference of Social Work.* Gen. Sec., Howard R. Knight, 82 N. High St., Columbus, Ohio.

AUGUST 13.—MEXICO CITY.
International Federation for Housing and Town Planning. Congress. Gen. Sec., Donald C. L. Murray, 25 Bedford Row, London, W. C. 1, England.

OCTOBER 3-7.—PITTSBURGH, PA.
National Recreation Association. (William Penn Hotel.) Administrative Sec., Thomas E. Rivers, 315 Fourth Ave., New York.

OCTOBER 10-14.—CHICAGO, ILL.
National Safety Council. Congress. (Stevens Hotel.) M'ng Dir., W. H. Cameron, 20 N. Wacker Drive, Chicago, Ill.

News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

Road Stabilization Test Equipment for Soils

A convenient piece of test equipment for determining the stability of soils or soil mixtures has been developed by the Black & Decker Manufacturing Co., Towson, Md. This Soil Stability Test Load-O-Meter is 55 inches high, 22 x 18 inches in plan, and weighs 700 pounds.

In order to determine the amount of stabilizing material to be used with local soils, sample cores are prepared using various arbitrary percentages of stabilizers, such as oil, asphalt or emulsified asphalt. The sample cores can be compacted to required density with the Soil Stability Test Load-O-Meter. After the cores are prepared, they are ready for the absorption test and the stability test. The stability test is accomplished with the Test Load-O-Meter by the extrusion method. The results indicate the proper percentage of stabilizer necessary to produce a surface which retains its stability against displacement under tractional forces, and sufficient flexural strength to give good load distribution to the subgrade yet sufficiently flexible to yield slightly under passing loads without breaking up.

This test Load-O-Meter has an 8½-inch gage hand calibrated at 100-pound intervals from 0 to 50,000 pounds. The gage is equipped with a maximum indicating hand. The pressure is applied to the hydraulic cell and to the plunger of the extrusion apparatus by a heavy-duty journal jack whose gears are mounted on ball-bearings. The ratchet shaft is equipped with an auxiliary spider wheel which makes it possible to apply low pressure by hand from 0 to 10,000 pounds at a very uniform rate of speed. From 10,000 to 50,000 pounds pressure, the load is applied by means of a bar fitting into the ratchet shaft.

Full information, including a picture of the machine, may be secured direct from the manufacturer.

New Sanitary Bubbling Drinking Fountains for Public Use

Six new drinking fountains, made of vitreous china and sculptured so as to be easy to clean, have been announced by the Crane Co., 836 South Michigan Avenue, Chicago, Ill. These fountains have a rugged design especially adapted for use in schools, public buildings and parks where convenience and hygiene are factors.

Three of the new models are called the Erie line. One of these, with integral

NEW MODELS OF CRANE DRINKING FOUNTAIN

Top—"Erie" model with two bubblers; lower left—"Oasis" model; lower right—"Erie" model with two glass receptors and ice faucet

strainer, is equipped with two bubblers, automatic stream regulators and improved self-closing valves and loose key stops. Other new Erie fountains include a single bubbler with a push-button, self-closing ice-water faucet, and also a combination bubbler and ice-water faucet with glass receptor. The new Ontario fountain with two bubblers is similar to the Erie except that it is of the roll-rim type supported on brackets.

There are two fountains in the Oasis model. The supply and waste fittings are concealed in a housing to improve the appearance and eliminate condensation. Both of these fountains have vitreous china backs, one 8 inches high, the other 15 inches high. Either one of these fountains can be had with ice-water faucets if desired. The bubblers in all these fountains are located above the rim to avoid back-siphonage.

Police Radio System Installed in Rock Hill, S. C.

A new police radio system has been installed in the city of Rock Hill, S. C., by the Gamewell Co., Newton Upper Falls, Mass., distributors of Westinghouse radio equipment for municipal service. The equipment now operating includes a medium high 50-watt transmitter and superheterodyne receivers on police cruising cars. This system operates on a frequency of 2,430 kilocycles, and the call letters of the new system are WPRH.

A new feature of the installation is a light-weight vertical antenna, 109 feet above the street level, which radiates strong signals in the area covered by the cruising cars.

Hamilton Appointed District Sales Manager

S. C. Hamilton has been appointed District Sales Manager of the Birmingham territory by the Chicago Bridge & Iron Co., 37 West Van Buren Street, Chicago, Ill. Mr. Hamilton graduated from Iowa State College in 1928 and immediately joined the staff of the Chicago Bridge & Iron Co.

New Trailing Sander Promotes Traffic Safety

A new street and highway sander which spreads a swathe 25 feet wide when the truck pulling it is traveling at 10 miles per hour, and which is readily attachable to any make of dump-truck, has been announced by the Good Roads Machinery Corporation, Kennett Square, Pa.

This single-wheeled Model S rotating disk sander is fed either by hand shovel or through a chute placed in the tail-gate of the truck. Material passes from the 26 x 30-inch hopper over a cone agitator and is spread by the spinner disk. This disk is mounted on a vertical shaft set in Timken bearings and is geared to the single pneumatic-tired wheel on which the spreader rests. The wheel turns with an axle set in roller bearings.

The truck attachment consists of a steel angle support bolted to each side of the truck frame by hook bolts and adjusting racks. Across these is bolted a third piece to take the spreader drawbar. The spreader is quickly and easily fastened to lugs on this cross angle by means of a pin and latch, providing a hinge which permits the spreader to follow the contour of the road.

THE NEW GOOD ROADS MODEL S SANDER

Five Personnel Changes at Caterpillar Tractor Co.

Five important changes in the organization of the Caterpillar Tractor Co., of Peoria, Ill., have been announced recently. C. Parker Holt, formerly Executive Vice-President, has returned to the San Leandro, Calif., office of the company, where as Vice-President he will direct all Caterpillar activities and coordinate the work of the several departments with their headquarters at Peoria. A. T. Brown, formerly Vice-President for the administration of the accounting, treasury, traffic and parts departments, succeeds Mr. Holt.

L. B. Neumiller, formerly Director of Industrial Relations, has been made Vice-President in charge of the parts, service and traffic departments as well as the active management of industrial relations, and D. G. Sherwin has been advanced from Treasurer to Vice-President, administering the advertising, sales and treasury departments. D. A. Robison, formerly Assistant Treasurer, has been elected Treasurer to fill the vacancy created by Mr. Sherwin's promotion.

Two-Wheeled Spreader for Sand and Cinders

A sand and cinder spreader which is small in size and easily attached to the rear axle or frame of a motor truck is produced by the Portable Elevator Manufacturing Co., Bloomington, Ill. The Little Giant spreader is carried on steel wheels with low-pressure tires having a heavy tractor tread to provide ample traction to operate the simple mechanism which drives the spreading discs or spinners. These are 18 inches in diameter, and each spreader is equipped with two discs for greater width of spread.

THE LITTLE GIANT SAND AND CINDER SPREADER

Above the spinners is a hopper 36 inches wide, 30 inches long, and 18 inches deep of galvanized steel. Into this hopper, men on the truck hand-shovel the material being spread. All gearing is covered by a canopy type steel shield, protecting it from falling material. The unit is fitted with Zerk pressure-gun lubrication nipples and the chassis bearings have Chrysler-Amplex oil-lite sleeves.

There are two feed openings in the hopper bottom, one over each spinner, with two-section slides to cover each opening. One section of the slide adjusts for the kind of material to be spread, while the other takes care of the quantity of material. Both the density of coverage and the width of the spread can be regulated. The width of spread varies from 8 to 25 feet. Both wheels drive the main axle through ratchet clutches which may be disengaged so that the wheels revolve free, and the mechanism does not function when trailing the truck from job to job.

Straight-Blade Plows to Remove City Snow

The straight-blade snow-plow is used for plowing moderate snowfalls in suburban areas and cities and for cleaning up after a V-type plow has opened up country roads after a heavy fall of snow. It works fast and requires little power. The Blackhawk straight-blade plow made by Arps Corporation, New Holstein, Wis., is furnished in a reversible type single blade for plowing either to the right or to the left side of the street. It may be quickly interchanged with a V-plow on the same frame.

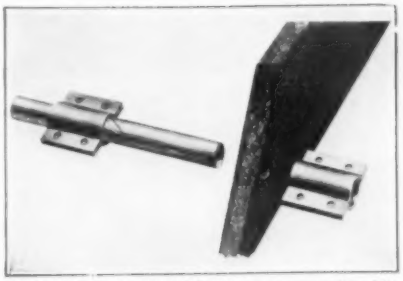
The Blackhawk plow has a safety trip and the skid shoes are provided with offset toggle arms that permit the plow to tilt back and rise automatically 5 to 6 inches when striking any obstruction. The plow ordinarily cuts clear to the roadbed. Special adjustable skid shoes are provided to keep the plow elevated one or two inches if this clearance is desired.

Blackhawk straight-blade plows are 84 inches wide, 27 inches high in front, and 38 inches high in the rear. The plow complete weighs 1,105 pounds.

Arps Corporation also makes small V-type Blackhawk sidewalk plows for small tractors. These are 30 inches high in the front and 37 inches high in the rear, have a hydraulic lift of 12 inches, and weigh 915 pounds.

A New Dowel Device for Concrete Joints

A new device designed to provide a dependable connecting support at the joint between concrete slabs, to eliminate vibration during load transfer, and at the same time to permit free lateral slab movement during temperature changes, has been announced by the Five-Way Expansion Joint Co., 20 North Wacker Drive, Chicago, Ill.



METHOD OF INSERTING A T-G BAR IN A STANDARD JOINT

This new T-G Bar consists of a pair of stress reducers and a metal sleeve of special analysis steel stampings, a dowel and two caps for closing the ends of the sleeves to seal in a lubricant. The smooth cold-rolled dowel fits tightly within the sleeve, which, when lubricated, forms a metal bearing, permitting it to float freely during expansion and contraction. The stress reducers each consist of two pieces, held together by four rivets, two in each of the bond wings. When in place, these wings lie in the horizontal plane of the slab and provide in the concrete an additional bearing surface of approximately 11½ square inches and eliminate practically all stress within the dowel.

The T-G Bar is completely assembled at the factory and comes to the job in two parts. A hammer to drive them together is the only tool necessary.

To install the T-G Bar at the expansion joint, one end is slipped through the hole of the cushion material. With the bar in place, the stress reducer for the opposite side is driven over the sleeve until it comes flush with the joint. The helical slots at the centers of the sleeves are then entirely within the joint, whether it be air cushion type or of solid material. When the second stress reducer has been driven home, the workman has nothing more to do but see that the wings are in the horizontal plane.

It is claimed that the T-G Bar will not wedge, and no indication of funneling has yet been found where it was installed. They are set on 20-inch centers, using only 12 for each 20-foot joint. This Bar has been approved by the U. S. Bureau of Public Roads and is now included in many state standards.

American Meter Election

At a recent board meeting, F. H. Payne, President of the American Meter Co., 60 East 42nd Street, New York, was also elected Treasurer of the corporation to fill the vacancy created by the death of Donald McDonald.

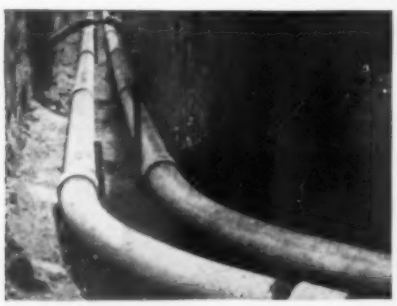
The vacant office of Secretary was filled by the election of John Van Norden, formerly Assistant Secretary. Mr. Van Norden also was elected Assistant Treasurer and will be in resident charge of the New York general offices. He will continue his duties as manager of sales promotion.

WHEREVER THIS CONDUIT GOES DOWN...

Down go Distribution Costs, too!

ON STREET-LIGHTING SYSTEMS, your savings on Johns-Manville Transite Conduit start right at installation. Strong enough to go down without a concrete envelope, it withstands all ordinary traffic loads and soil stresses.

ON PARK SYSTEMS, Transite Conduit can be installed without an envelope—eliminating concreting costs entirely. And it's just as much at home under water as underground! Asbestos-cement in composition, this conduit is resistant to corrosion, immune to rot and decay.



ON RESIDENTIAL DISTRIBUTION SYSTEMS, Transite Conduit's durability safeguards installation savings by assuring continued, virtually maintenance-free service.

Johns-Manville
TRANSITE
ELECTRICAL
CONDUIT

ON SIGNAL SYSTEMS—permanent conduit effectiveness at lowest installed cost! Here, because of the fewer ducts, savings on cost per duct-foot are especially great.

EVERY time a Transite Conduit job goes down—down goes the cost of electrical distribution in another municipality!

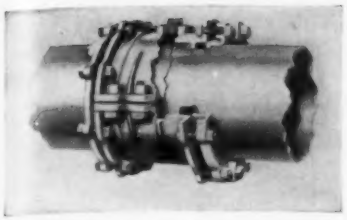
The list grows daily. All over the country, in city after city, this modern Johns-Manville electrical conduit is waging a successful fight for lower installation and maintenance costs on every type of municipal distribution system.

How? Why? Let the facts speak for themselves . . . Transite Conduit, made of two permanent materials—asbestos and cement—is so strong it can be laid without an envelope. By this elimination of concreting costs, immediate and large installation savings are effected.

And, after installation, come the further economies of lasting, trouble-free service. For Transite Conduit's virtually imperishable composition assures incombustibility, immunity to rot and decay, non-induction and resistance to all corrosive soils.

On park, residential, signal, telephone and street-lighting systems—the time-proved advantages of Transite Conduit point the way to permanent, economical distribution service.

May we furnish the full story? For data sheets on this modern conduit, write Johns-Manville, 22 E. 40th St., New York City.



CUTAWAY VIEW OF DRESSER REPAIR SLEEVE (STYLE 57)

Showing how it encloses and repairs breaks and holes in the straight run of pipe

Solving the Problem of Winter Pipe Breaks

The close proximity of winter weather brings to water-works men in the North visions of midnight phone calls, repair crews working frantically in sub-zero temperatures to restore service, long hours of pumping ditches dry, and other grief. Many of these winter hardships, and much of the expense and delay in connection with them, can be eliminated by having on hand and installing quickly the proper type of repair sleeve.

According to the S. R. Dresser Manufacturing Co., Bradford, Pa., Dresser sleeves permit full or partial service while the repair is being made, and can be installed under any weather or ditch conditions, even under water. They are easy to handle because they are cast of light-weight, high-strength metal, and require only a wrench and a few minutes to install; further, they provide flexibility which prevents repetition of the break. Another advantage claimed is that the repair is permanent and need never be re-made.

For enclosing breaks and holes up to 8 inches long in the straight run of cast iron pipe, Dresser offers a Style 57 repair sleeve in sizes from 2-inch to 12-inch cast iron inclusive. This type holds a maximum working pressure of 250 pounds per square inch. Splits longer than 8 inches can be repaired by joining two or more of these sleeves. Another type of repair sleeve, made especially for repairs to broken or split bell-and-spigot joints, is the Dresser Style 26, which completely encloses the damaged joint.

The Proportioneers' Crash

This is not the story of a bankruptcy, but of a most unfortunate trailer accident. Early in October, when Jeff Corydon, of Proportioneers, Inc., Providence, R. I., was driving at about 55 miles per hour near Roanoke, Va., en route to the American Water Works Association meeting in Galveston, Texas, his well-known laboratory and refreshment trailer unhitched. Jeff Corydon and the car kept going along the right side of the road unscratched, but the trailer interviewed a telegraph pole and spread 42 brands of cigarettes, drawings, papers and equipment, which required hours to reassemble.

Undaunted, Corydon sent the roofless and tailless and half-sideless trailer 200 miles by rail to make a service call at Bryson City, N. C. Jeff Corydon's host of friends will be glad to know that he suffered no injury except to his pride in the trailer hitch.

Automatic Signal Corporation Moves Offices from New York

The Automatic Signal Corporation, manufacturers of Electro-Matic and Traffi-O-Matic traffic-actuated traffic dispatching systems, has moved from its former offices at 230 Park Avenue, New York, to Regent Street, East Norwalk, Conn.

A M-M TYPE ZTI INDUSTRIAL TRACTOR WITH SIDEWALK SNOW-PLOW

Sidewalk Snow-Plows on Small Tractors

The Minneapolis-Moline Power Implement Co., Minneapolis, Minn., recently sold twelve of its narrow type Model ZTI industrial tractors to the city of Minneapolis primarily for mounting sidewalk snow-plows and for many other services throughout the four seasons. Among the additional services which will be rendered by the tractors are mounting a tractor-type mower and mounting road-planer attachments. The tractors will also be used in various haulage and power applications where tractor effort and belt power are required.

Otto Elected President of American Centrifugal

Stuart Otto has been elected President and Director of the American Centrifugal Corporation, 115 Broadway, New York. Joseph F. Pecker, consulting engineer, and operating under the name of Machine and Tool Designing Co., 10th and Chestnut Streets, Philadelphia, Pa., has transferred all matters pertaining to their centrifugal machines for the dewatering of sludge to the American Centrifugal Corporation, to which all communications should be addressed.

American-Marsh Pumps New Firm Name

The American-Marsh Pumps, Inc., Battle Creek, Mich., is the new firm name of the organization formerly known as American Steam Pump Co. The organization continues the manufacture of centrifugal, turbine, steam and power pumps, and has recently issued Bulletins 265 and 1050 covering American-Marsh UTA submersible electric-motor-driven deep-well centrifugal pumps.

New Tractor Designed with All-Rubber Track Has High Speed

A new tractor of the track-laying type has been announced by the Marmon-Herrington Co., Indianapolis, Ind. The road speeds of this new tractor are reported to be 25 miles an hour and better with a consumption of one gallon of gasoline for four to five miles of road travel.

The new tractor utilizes the B. F. Goodrich new type of rubber track with Marmon-Herrington patented suspension. The special track is a continuous band of rubber, smooth on the inner surface and with traction lugs on the outer surface. This band does not stretch or lose its shape, because of a core of from 20 to 30 endless, flexible wire steel cables gripped at intervals by the track guide and drive lugs. The drive sprockets impart power directly to the cables, and the rubber is used only as a cushioning medium and not to transmit power.

The new type of steering clutches are fully air-cooled and operated mechanically with an auxiliary booster system. The tractor can be pivot-turned either from a standing position or from the highest forward speed. The manufacturer states that its center of gravity is so low that the unit can be turned on the face of any hill it will climb; and that while it may slip sideways, it does not turn over. The special welded steel hull is watertight, allowing operation in more than 36 inches of water without danger to the ignition.

Arrangements are being made to adapt this tractor for use with road construction equipment and for snow-plowing.

THE NEW MARMON-HERRINGTON CRAWLER TRACTOR WITH RUBBER TREADS

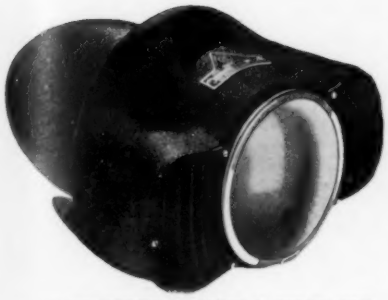
Today's traffic congested streets have enormously complicated the work of police and fire departments. Even the most efficient departments need the help of modern electrical *public safety* equipment. When you plan for public safety, why not take advantage of Graybar's experience . . . its convenient service of supply on modern traffic control . . . Union Metal street lighting . . . Horni fire-alarm systems . . . Karpark parking meters . . . Western Electric police radio. Write us!

GraybaR Distributed and guaranteed by GraybaR ELECTRIC COMPANY

GraybaR

OFFICES IN 83 PRINCIPAL CITIES • EXECUTIVE OFFICES, GRAYBAR BUILDING, NEW YORK, N. Y.

Why not remember to mention THE AMERICAN CITY?



THE NEW FEDERAL SUPER X SIREN FOR EMERGENCY TRUCKS

New Weatherproof Directional Siren

To be entirely satisfactory, a siren for emergency fire and police cars must be able to penetrate ordinary noise interference and be equally effective in fair and inclement weather. To overcome all weather conditions in its new vehicle siren, Federal Electric Co., 8744 South State Street, Chicago, Ill., has developed an aluminum alloy casting which completely houses the working parts of the siren. To check the sound waves in order to determine whether a real improvement in sound volume had been made in comparison with conventional types of sirens, a decibel meter was used. The new Federal Super-X siren generates all its sound energy in the enveloped housing, and projects the sound in one forward direction. This provides a tone volume directly forward in the line of travel five decibels greater than conventional sirens, according to the manufacturer.

This directional feature, combined with a brilliantly projected beam of red light flashing on and off, assists the operators of emergency vehicles to warn motorists and pedestrians with an audible as well as visible signal identifying the vehicle carrying it as one requiring a right-of-way.

The outside standard finish of the new siren is black morocco, baked on under a temperature of 200 degrees Fahrenheit. Most new police-car and emergency-car owners prefer this finish for its durability, and it can be used as a base coat for repainting the siren to match the vehicle if desired. Special roof mountings are designed for each make of car, because sirens are 25 per cent more efficient when mounted outside the car instead of under the hood.

New Motor-Truck Hoists and Bodies

A new series of 6-page bulletins describing Gar Wood Truck hoists and bodies has recently been released by the Hoist and Body Division of Gar Wood Industries, Inc., Detroit, Mich. Bulletin 2 describes and illustrates Gar Wood heavy-duty cam and roller hoists, while Bulletin 3 deals with Gar Wood heavy-duty dump bodies. Copies of these new Gar Wood Bulletins may be secured by municipal departments and municipal-truck operators without obligation by writing direct to the Hoist and Body Division of Gar Wood Industries, Inc., and mentioning THE AMERICAN CITY.

Catalog on Treatment of Swim Pool Water

Graver Tank & Mfg. Co., Inc., East Chicago, Ind., has re-issued Bulletin 500 with revisions to answer the call for information desired by architects, engineers, builders and swim pool owners, who wish to maintain a sanitary, hygienically safe and inviting pool. This bulletin contains numerous illustrations and a complete discussion of Graver refiltering and circulating equipment, together with interesting reports from country club pool owners as well as municipalities. Copies may be secured free by our readers by writing direct to Graver and mentioning THE AMERICAN CITY.

FRONT COVER OF THE NEW GRAVER CATALOG

Rickard Elects Officers

Rickard and Company, Inc., 330 West 42d Street, New York, has announced the election of the following officers: President, James R. White; First Vice-President, Howard L. Fisher; Vice-President, Edwin C. Mayer; Treasurer and General Manager, Julian Gran; Secretary, Louise F. Maher.

Better Drainage with Corrugated Pipe

A new pamphlet which traces the history of corrugated metal drainage pipe from the time it was invented in 1896 to the present day has been issued by the Armco Culvert Manufacturers Association, Middletown, Ohio. Tables show that when the first corrugated culverts were installed, the total motor-vehicle registration was 16, compared to 26,221,052 for the present day.

The booklet contains photographs portraying the durability of Armco ingot iron and the results of field investigations during the last quarter-century. It also discusses the development of Armco Paved Invert pipe in 1925, and concludes with a description of Asbestos-Bonded Armco pipe. A chart shows the chronology of major improvements in corrugated metal drainage pipe.

Streamlined Street Flusher

The trend toward modernization of cities has extended to street-cleaning equipment. Old-fashioned street flushers with their unsightly tanks are now being replaced by streamlined models of pleasing design. The streamlined flusher illustrated is built of sheet metal, hot-rolled on the continuous strip mills of the Bethlehem Steel Co., and the tanks are made at the Heil Co. fabricating plant in Milwaukee, Wis.

This flusher is one of the 75 aluminum-painted, 2,600-gallon flushers, with pump in the rear and driven by a special power take-off from the transmission, which were purchased by the New York Department of Sanitation from the Municipal Supply Co., South Bend, Ind. The steel skirting covers the water tank and lower mechanisms, giving a smooth, efficient appearance. Even the rear end carries out the streamline motif, curving downward in a beaver-tail design such as is seen on many high-priced automobiles. Two outward-opening doors, set in the rear, give access to the flushing equipment.

ONE OF NEW YORK'S 75 NEW STREAMLINED STREET FLUSHERS

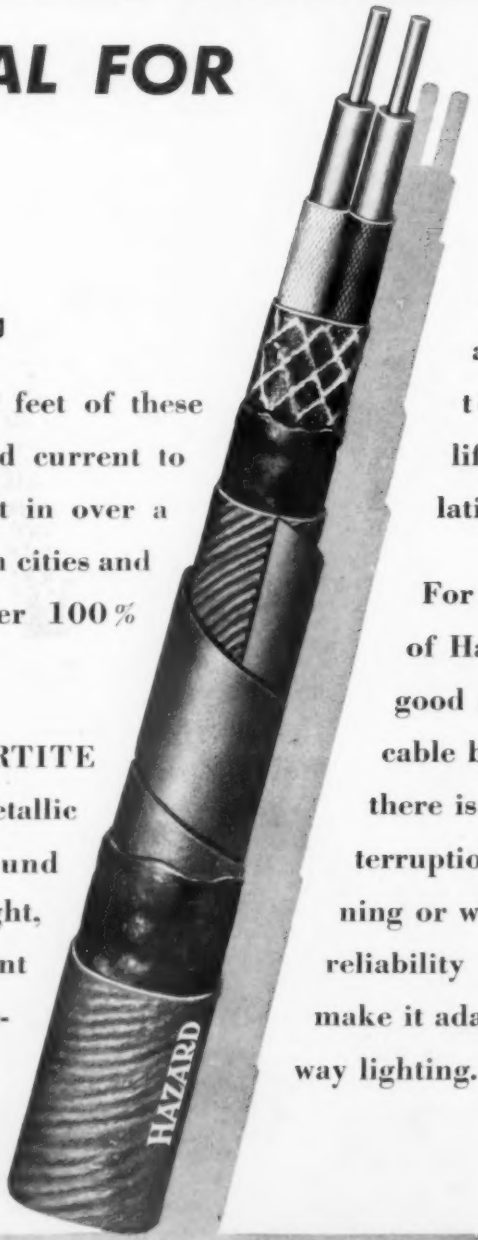
HAZARD

NON-METALLIC ARMORED CABLES ARE IDEAL FOR

street,
bridge,
highway
and airport lighting

Many millions of feet of these Hazard Cables feed current to lighting equipment in over a thousand American cities and continue to render 100% service.

HAZARD ARMORTITE CABLE is a non-metallic armored underground cable, light in weight, low in cost, efficient in service. Its "Submarine" rubber insulation is a high development of the art of cable making; it has an exceedingly flat curve of deterioration and may be expected to last throughout the life of the lighting installation.



For highway lighting, the use of Hazard Armortite Cable is good engineering practice. The cable being safely underground, there is no danger of current interruption from accident, lightning or winter storms. Its low cost, reliability and ease of installation make it adaptable to inter-city highway lighting.

HAZARD INSULATED WIRE WORKS

Division of The Okonite Company
WORKS: WILKES-BARRE, PA.

Sales Offices:
New York Chicago Philadelphia Pittsburgh Buffalo Boston Detroit
Atlanta Seattle Dallas San Francisco Los Angeles Washington

THE CITY OF DETROIT OWNS 1,081 FORD BUSES

Ford Sells More Buses

Sales of Ford transit buses are on the increase—in one week as many as 65, including 30 buses for the Peoples Motor Bus Co., of St. Louis, 8 for the city of Alexandria, La., and 6 for the city of Phoenix, Ariz.

Motor Business Expands

R. W. Owens, Manager Motor Division, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., remarked, in explaining some of the business reasons that culminated in the company's new mass production of alternating current motors at East Pittsburgh: "For years the use of electric motors has steadily increased. In years of generally poor business, of course, the number of new motors built has decreased, and in good years the demand has been above normal, but over any long period the trend has been steadily upward. The tremendous increase in the use of small motors for driving domestic appliances is common knowledge."

Street-Cleaning Trucks Parade in New York

Late in October a big parade in which the traditional elephants were replaced by elephantine motor trucks, was staged in New York City with 504 new commercial vehicles of the Department of Sanitation passing before Mayor LaGuard a in a demonstration of how up-to-date motorized equipment aids in public service. Prominent in the procession was a large part of the fleet of 615 GMC heavy-duty units purchased by the Department of Sanitation for garbage and snow removal within the past 12 months at a cost of nearly $3,000,000. Capable of hauling gross loads of 37,000 pounds, these new trucks are equipped with special front-end attachments for push-type snow-plows. Typical of the labor-saving devices used in the New York City equipment, these trucks are equipped with 24-yard capacity dump-bodies mounted on drop frames that make it possible to load from street level. The bodies also tilt so that it is possible to compress the contents into a smaller space.

Every type of motorized equipment was included in the big parade. Even with the trucks wheeling three abreast, it required 40 minutes to pass the reviewing stand. The procession was made doubly interesting to the 500,000 spectators because the trucks carried signs indicating their specific service. First in the parade were antiquated street flushers with patched hose, followed by a battalion of streamline flushers, now used to keep New York's streets free of dust and débris. Following this were electric vehicles charged from current generated by the burning of garbage. Then came the gasoline trucks with the latest type bodies designed to eliminate the hazard of emptying garbage cans into high bodies. Old snow loaders and the latest type were next in line of march, with small crosswalk plows bringing up the rear. The parade, which was one of the most interesting in the annals of transportation history, in that it gave spectators an opportunity to see the latest trucks and learn how they aid in keeping a great city clean, was repeated in the same day in Brooklyn.

Armco Dedicates Research Laboratories

On November 5, the American Rolling Mill Co., Middletown, Ohio, in the presence of more than 200 scientists from all parts of the country, dedicated its new research laboratories. The keynote of the dedicatory address by Charles F. Kettering, Vice-President in charge of research of General Motors Corporation, at the banquet which concluded the day's activities, was "Research is what keeps industry healthily dissatisfied with itself."

The building, costing $280,000, was erected by The Austin Co. in cooperation with Harold Goetz, Middletown architect. The building is of modern streamlined architectural design, with an exterior of porcelain enameled iron, stainless steel and glass block. The building has a frontage of 255 feet and a depth of 175 feet, providing 43,500 square feet of floor space. It is a sawtooth type with welded steel frame construction of new design. Not a rivet was driven in the structure.

A PORTION OF THE PARADE OF DEPARTMENT OF SANITATION MOTOR VEHICLES PASSING THE REVIEWING STAND IN NEW YORK CITY

EVERYTHING YOU NEED IN STREET LIGHTING

Pressed Metal Standards
Concrete Standards
Flood Lighting
Equipment
Cutouts
Ornamental Luminaires
Compensators
Glassware
Holophane Refractors
Ornamental Brackets
Cast Iron Lighting Standards
Insulating Transformers
Suspension Brackets
Oil Switches
Suspension Luminaires
Hewn Cedar Standards
Mast Arms
Sockets
Protective Relays
Time Switches
Reflectors
Oil Station Lighting Equipment

HUNDREDS MORE IN THE L-M STREET LIGHTING CATALOG
WRITE TO SOUTH MILWAUKEE, WISCONSIN, FOR FULL INFORMATION

LM
LINE MATERIAL CO.

THE NEW SERVICISED FACTORY WHICH HAS ARISEN QUICKLY FROM THE ASHES OF THE OLD PLANT

Servicised Recovers from Fire Damage

The recent fire at the Servicised Products Corporation plant has not seriously affected deliveries. The front wall of the plant did not fall but was damaged. The forming end of the plant was affected, but the mixing room, which has a fireproof enclosure, was not seriously damaged. Soon after the fire the making of asphalt plank began, and a few days later the expansion joint machine was placed in operation.

During the short period necessary for recovery, Servicised has drawn on its stock of joints to fill orders, and reports that as far as they know all requirements have been met. Sponge rubber expansion joint and cork rubber joint are being manufactured at Syracuse at the Servicised plant there. This is the point at which Syra-Bord rubber tile flooring is manufactured. The main offices of the Servicised Products Corporation are at 6051 West 65th Street, Chicago, Ill.

Gasoline-Powered One-Man Hammers

The Barco portable gasoline hammer is an air-cooled, two-cycle single-cylinder, gasoline-driven hammer and pavement breaker which delivers approximately 1,500 blows per minute. Model H-5 will accommodate any standard 1⅛-inch hex shank tool, while Model J-1 can accommodate a 1-inch hex tool. This hammer uses low test gasoline, and the lubrication is taken care of by mixing oil with the gasoline and pouring into the gas tank. The normal consumption is one quart of mixture per operating hour.

No mechanic is required, since it is distinctly a one-man machine. The operator can quickly dismantle and service it alone. The two models mentioned above weigh 89 and 70 pounds respectively. These hammers are made by Barco Manufacturing Co., 1801-1815 Winnemac Avenue, Chicago, Ill.

Motor-Driven Snow-Plow for Cleaning Sidewalks

A new sidewalk snow-plow for mounting on the Model L Gravely tractor has been announced by Gravely Motor Plow and Cultivator Co., Dunbar, W. Va. This new snow-plow is designed especially for use with this tractor. It has an adjustable feature making it possible to clear a path from 40 to 54 inches in width. The curvature of the blade is adjusted for rolling the snow instead of packing it, and the plow is flexible and easy to handle. It is possible to go in and out of small spaces easily, according to the manufacturer.

The powerful small tractor is driven by a 5-hp, 4-cycle, air-cooled motor and has two forward speeds and one reverse. The tractor is capable of year-round service, and standard equipment includes a power-driven reel-type rotary motor and sickle mower attachment. To change attachments, it is only necessary to remove four bolts.

THE GRAVELY POWER-DRIVEN SNOW-PLOW

Montefiore Hospital in New York City used the Gravely motor plow last winter for removing the snow from its sidewalks, driveways and street crossovers, and found this machine more than paid for itself in that one winter. Formerly the hospital employed a crew of men to shovel the snow, but with the purchase of the machine they were able to keep the sidewalks clean with the services of only two men. Two men were required, as there are several miles of sidewalk in the hospital, and the plow is operated two shifts with one man to a shift.

AMERICAN ROAD BUILDERS' ASSOCIATION, Municipal Division Convention, Cleveland, January 21-27, 1938

Making and Using Insulated Cables

The Okonite Company, Passaic, N. J., recently completed a new 2-reel sound film showing how rubber-insulated wires and cables are made and used. This film, for which Lowell Thomas is the narrator, will be shown without charge in 16-mm and 35-mm sizes to those interested in this subject.

The story opens with a brief description of the raw materials used in making Okonite cables. Quick shots of the Amazon jungle, asbestos mines, steel mills, copper mills, the cotton industry and others, lead up to the arrival of the raw material at the Okonite plant. Then each step of manufacture of Okonite rubber-insulated cables, as well as supplementary scenes showing the use of other insulations, protective covering and braids, are shown. The closing scenes show the uses of Okonite wires and cables in various industries.

INSURE NIGHT DRIVING

Safety

WITH WESTINGHOUSE

REFLECTOLUX

Night driving *safety* is in direct proportion to the night driving visibility provided by fixed street lighting. All other factors considered, the automobile driver still must be able to see far enough ahead to avoid accidents . . . if municipalities expect safety measures to be successful in reducing night traffic fatalities.

A new technique in street lighting practice has been developed by illuminating engineers to meet this need for night driving safety, and Westinghouse now makes available an entirely new pendent luminaire . . . REFLECTOLUX . . . to carry out the principles of this technique.

Reflectolux provides adequate brightness on the street surface . . . a surface that is in effect a lighted background for every obstruction in the driver's path. Thus, through *silhouette vision* it is possible for the driver to see persons and obstructions quickly and far enough ahead to avoid them.

With a combination of new features providing more light, less maintenance, greater flexibility and durability than have ever before been offered in a street luminaire, Reflectolux furnishes municipalities with a solution to the deplorable rise in nighttime traffic deaths.

For the new book, "SAFETY with Light" — address Westinghouse Electric & Manufacturing Co., Lighting Division, Edgewater Park, Cleveland, Ohio.

Reflectolux Jr. with ornamentation . . . designed for circuits up to 3,500 volts and lamps up to 500 watts or 10,000 lumens.

Reflectolux Sr. . . . designed for use with lamps up to 750 watts or 15,000 lumens.

Reflectolux Jr. without ornaments . . . designed for circuits up to 3,500 volts and lamps up to 500 watts or 10,000 lumens.

WHEN YOU THINK OF *Lighting* THINK OF

Westinghouse

During December we hope you will remember to mention THE AMERICAN CITY.

Outdoor Lighting

A Section of THE AMERICAN CITY
Devoted to the Lighting of Streets, Highways, Bridges, Airports, Athletic Fields and Parks, and the Floodlighting of Public Buildings

SODIUM LIGHTING (G. E. M-25) ON MAIN TRAFFIC ARTERY IN LORAIN, OHIO

Sodium Vapor Chases Death from 1½-Mile Strip

By A. M. POLLOCK
Service Director, Lorain, Ohio

LABELED "Death Strip" by the *Lorain Journal*, the section of West Erie Boulevard from the extreme westerly city limits almost to City Hall achieved twenty-seven bad accidents and two deaths from January 1, 1937, until a sodium lighting installation went into operation on July 23. The old lights were widely spaced and on shorter brackets hidden in the trees, inviting collisions which happened.

A new street-lighting contract gives the city of Lorain 20 per cent more light all over the city for a few less dollars. On Death Strip there is two times as much light as formerly. Sodium lighting was selected because:

1. Its color warns motorists.
2. It adequately lights the 50-foot pavement, permitting pedestrians to cross safely to view the famous electric fountain.
3. It provides better visibility in the lowland mist or fog that settles over Lorain towards evening.

It is probable that East Erie Boulevard, which also has a high accident record, including one fatality since the first of the year, will be similarly lighted. At that time a safe highway will protect tourists and residents, including our many youthful bicycle riders.

The sodium-vapor system comprises 34 10,000-lumen luminaires spaced about 200 feet apart for 1½ miles. Brackets 14 feet long assure uniform illumination. Loading zones for the electric interurban trains traversing the entire length are protected by strategically located lamps. Intersections at either end of the park, where pedestrians are most numerous, are protected by lamps turned at right angles to main traffic flow. Incidentally, the combination of the sodium illumination and the 15-projector General Electric fountain form a fascinating kaleidoscope.

Lorain is a city of conventions, and many visitors have asked about our sodium lights. I tell them that this system and high-visibility lighting in general are essential to safe motor traffic on our heavily traveled arteries. The Ohio State Highway Planning Survey has just indicated that the average traffic count per 24 hours on Death Strip exceeds 7,000. Peak traffic in the tourist season and the heavy freight shipments from eastern steel mills more than double this figure.

IF YOU WANT TO SAVE LIVES

Start Here

Light Your Main Traffic Arteries First

PEDESTRIANS and drivers face great dangers at night on most traffic thoroughfares. A recent survey shows that these streets are TEN TIMES MORE DANGEROUS AT NIGHT THAN DURING THE DAY!

Sixty-five per cent of 7279 traffic fatalities in 47 cities surveyed by a prominent insurance company occurred at night. *Nearly half of these night deaths occurred on thoroughfares constituting but ten per cent of the total street mileage.*

Light *does* save lives at night. Detroit reduced night accidents 82 per cent on 31 miles of improved thoroughfare lighting. Syracuse prevented 28 accidents in three months by improved lighting on thoroughfares. Cleveland has 62 per cent fewer night fatalities on well-lighted thoroughfares than on those poorly lighted.

Isn't your city one of those where more light would save lives and reduce property damage? If so, *now* is the time to improve your street lighting —and main traffic thoroughfares must be first on your list! Protect your family and friends by adequate street lighting. G-E lighting specialists will be glad to help you with necessary plans. General Electric Company, Schenectady, N. Y.

GENERAL ELECTRIC

500-248

THIS NEW LIGHTING AT MANITOWOC, WIS., PRODUCES FOUR TIMES THE ILLUMINATION OF THE INSTALLATION IT REPLACED

ABC of Modern Street Lighting

By R. L. BIESELE, JR.

Lighting Division, Westinghouse Electric & Manufacturing Co., Cleveland, Ohio

FIVE methods for improving existing street-lighting are: (1) increase the number of units; (2) use larger lamps in the present units; (3) install refractors or reflectors; (4) install high-efficiency electric discharge lamps; (5) reduce glare by increasing mounting heights and installing units with shielded light sources.

More Units and Larger Lamps

There are few installations now in service which could not be materially improved by an increase in the number of units or the size of the lamps. If the present installation was designed to provide for extensions and it follows modern standards, one or both of these methods would be recommended either alone or in conjunction with one of the other methods described in this article. Brainerd, Minn., is an example of this type of improvement. This city recently purchased 88 units to add to the present ornamental installation in the business district. The new units also provide an increase of 4 feet in height.

Light radiates in all directions. A refractor or reflector directs the light toward the street and provides a more even distribution of light on the roadway.

Refractors can be very easily installed in the majority of luminaires, and thus afford probably the simplest method of improving existing installations. It is frequently possible, merely by the addition of refractors in existing luminaires, to increase the illumination on the street to double its former value, with no increase in either the number of units or the size of lamps.

Probably the first improvement made on a street-lighting unit was to place a reflector above the lamp. Such a reflector can be very easily made a part of the pendent-type luminaire, and renders the pendent luminaire inherently more efficient than the post-top luminaire having a glass canopy. The introduction of pendent luminaires designed for appearance as well as efficiency now permits their consideration for all types of installations.

Manitowoc, Wis., changed over from a typical post-top luminaire employing a 325-watt series lamp to the pendent luminaire with 500 watts per standard, and the average illumination on the roadway was increased to *four times* its former value, with less than twice the wattage, or 2.5 times as much light on the street per watt of energy consumed.

Higher Efficiency Lamps

The incandescent lamp has very nearly reached the limit of its luminous efficiency in the larger sizes of lamps used for street-lighting service. The next step is the vapor lamps which produce light by means of an electric discharge through a metallic vapor, the most suitable of which are sodium vapor and mercury vapor.

Because of its monochromatic yellow, which results in severe color distortion, the sodium-vapor lamp has its major application in highway lighting.

The high-intensity mercury-vapor lamp has an efficiency between that of the sodium-vapor lamp and the incandescent lamp, and is being used increasingly for urban street lighting in combination with incandescent lamps.

Higher Mounting Heights

Glare from lighting units can cut in half the effectiveness of installations having mounting heights below 15 feet. Increasing the mounting height of the luminaire reduces glare (1) by increasing the angle between the luminaire and the observer's line of vision, and (2) by permitting the light from the luminaire to be directed more in a downward direction, thus decreasing the candlepower in this direction.

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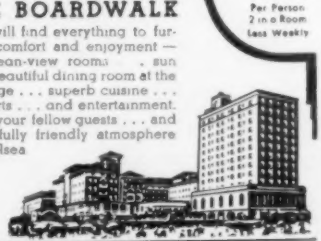
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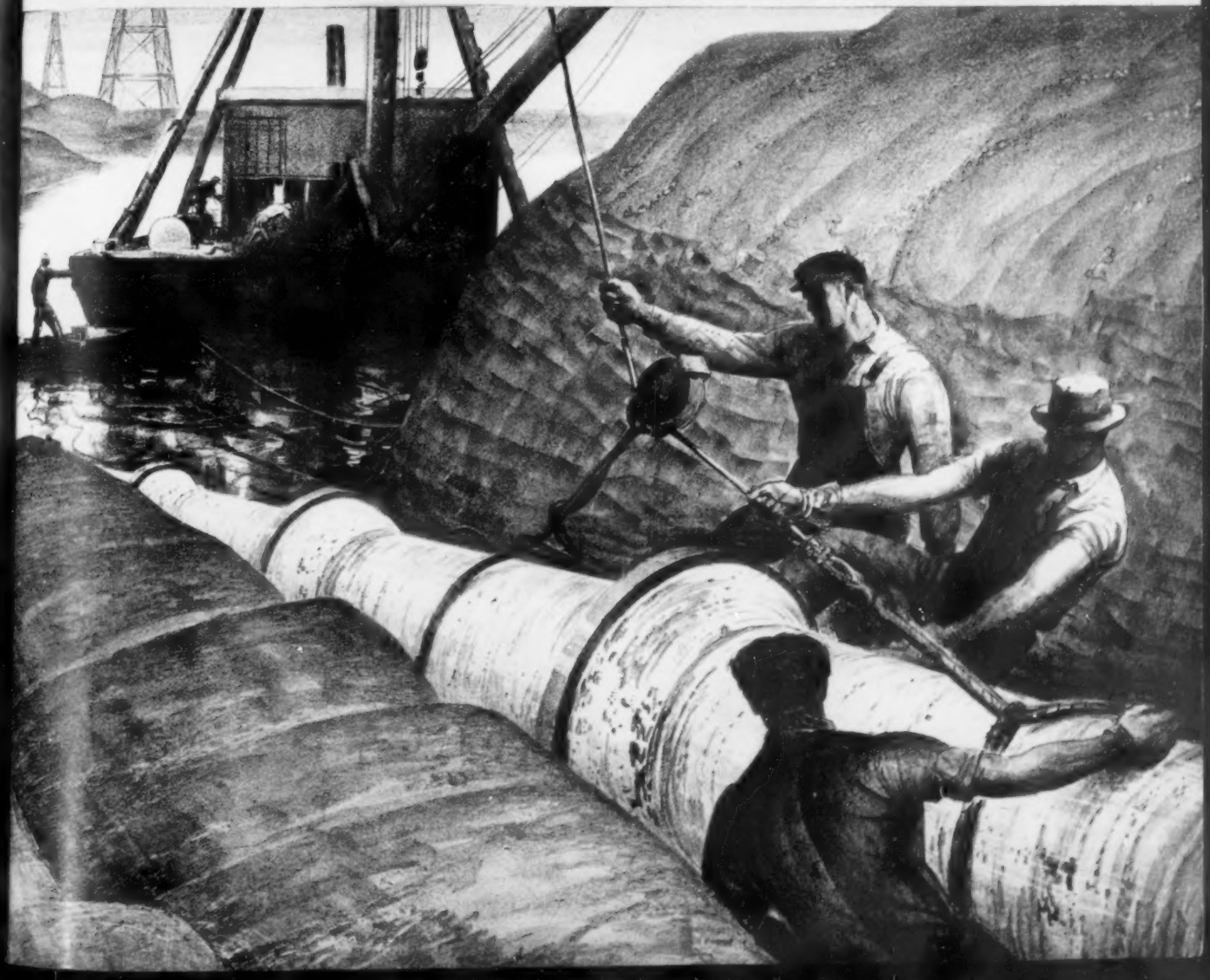

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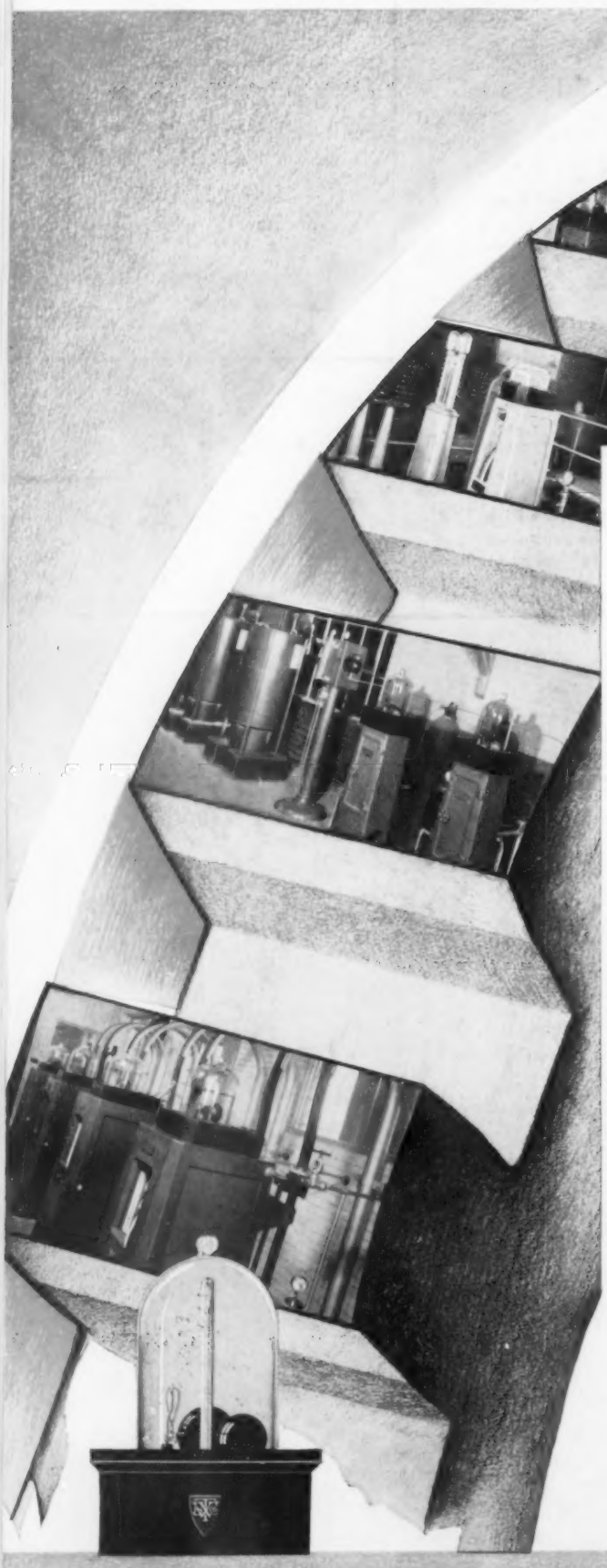

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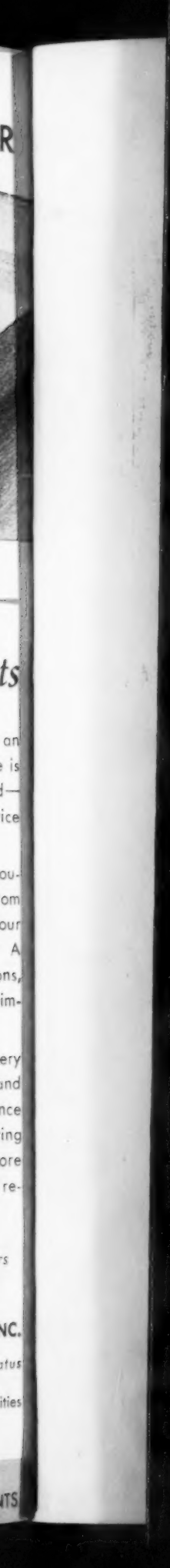

Volume LIII

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